New Orleans Medical
and
Surgical Journal

$4.00 Per Annum, 35c Per Copy
VOL. 103—No. 9

MARCH, 1951

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

SYMPOSIUM ON TRAUMA

THE PRIMARY TREATMENT OF ACUTE HAND INJURIES*

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NEW ORLEANS

The human hand is the most useful and most vulnerable member of the human body. Because of this the human hand is subject to a great variety of injuries. Hand injuries lead the list of industrial accidents. Upon being injured, the hand is first seen and cared for by the doctor most readily available. Upon this doctor then rests the responsibility for the accurate diagnosis of the damage sustained, and upon his judgment the eventual outcome largely depends. This doctor's management of the situation is the most important single factor in determining whether the injured hand will be restored to usefulness or whether complications or deformities will result.

FIRST AID TREATMENT

Like any other open (compound) wound, the freshly injured hand should be given careful protection from added contamination or additional tissue damage. The wound should be covered as early as possible with a clean or sterile dressing. Probing of the wound should not be done. Antiseptics should not be applied to the wound. The hand, preferably, should be splinted before the patient is transported to a hospital.

An accurate history is important in hand injuries. The determination of the time, place, causative agents, and the mechanism of injury is important.

In all but trivial injuries to the hand the examination should be performed under sterile aseptic conditions, such as is done in an operating room with adequate facilities available for the proper treatment.

X-rays should be made of the injured extremity without removing dressings, provided there are no metal splints used that would be opaque to the x-rays. X-rays should be taken prior to bringing the patient to the operating room unless facilities are available for this in the operating room.

DEFINITIVE TREATMENT

After the history has been obtained and x-rays are available, the dressing is removed from the hand, and the examination is carried out with the patient's cooperation. The function of tendons and muscles must be determined by testing against resistance. Injury to nerves must be tested by determination of sensory loss and then motor function. After the examination has been completed, the patient may then be anesthetized.

The choice of anesthetic is to be determined by the anesthetist, but general anesthesia is preferred. No surgery of the hand should be carried out without the benefit of a bloodless field gained by the use of a pneumatic tourniquet. After the tourniquet has been applied, the skin of the injured hand and forearm is prepared, either with soap and water or with a bland detergent and water. During this preparation the wound is protected by sterile dress-

*Presented at meeting of the Orleans Parish Medical Society, June 12, 1950.

ing. The wound itself is not washed with soap or detergents. After the entire area has been cleaned, a suitable antiseptic is used to prepare the skin. The antiseptic should not be introduced into the wound. The wound is then draped and the surgeon changes gown and gloves for the surgical procedure.

It is usually necessary either to enlarge the wound, or make a separate incision, in order to expose adequately the traumatized area. These incisions should parallel flexion creases. If they must cross a flexion crease, the line should be a curving incision or Z type incision. (Fig. 1) This is done

Fig. 1. Sketch showing incisions paralleling flexion creases.

to prevent a scar at right angles to a flexion crease from contracting and producing a flexion deformity.

Debridement in the hand should be thorough, but should spare tissue. Skin edges are excised with only a minimal amount of tissue being removed. Obviously traumatized tissue, such as muscle, is excised until viability can be recognized. Tendons, nerves, and bone fragments must be preserved if at all possible. Bone fragments that still have an attachment should be replaced. Completely detached fragments of bone are removed.

Injured nerves are best repaired by primary suture. This should be done primarily even if it is necessary to excise a small segment of nerve in order to obtain viable nerve tissue for an adequate suture. This suture should be done with the finest of silk sutures on atraumatic needles. Nerves in the hand can be sutured all the way down to the distal phalanx of the fingers.

Fractures are reduced under direct vision. Dislocations are reduced. The maintenance of the correct position of a fracture or dislocation is obtained by splinting in the proper position, or by traction in the proper position.

Tendon injuries may be sutured primarily only if the injury is of the extensor tendons or in an injury of the flexor tendons from the base of the palm proximally. Injury of the extensor tendons can be repaired primarily and the hands splinted in the position of rest for the extensor, which is that of wrist dorsiflexed, fingers extended not more than 180°. Tendon laceration in the palm of the hand can be sutured primarily if the wound condition permits. Tendon injuries at or above the level of the wrist can be sutured primarily. Tendon injuries that extend from the level of the distal flexion crease in the palm to the tip of the fingers should never be repaired primarily. Injuries in this "no man's land" are best treated after wound healing has occurred and when four to six weeks of time have elapsed since the injury.

Prior to wound closure, hemostasis is obtained after the tourniquet is released. The field should be dry before closure of the wound. It is important that tendons, ligamentous tissues, and joints should be covered with tissue. If skin has been lost, these areas must be covered, even if a local flap must be swung to cover the defect. The donor area can be skin grafted primarily. Stainless steel wire is preferable as a suture material in the hand because its proper use gives approximation of the

entire thickness of the skin and subcutaneous tissue, and eliminates the use of buried sutures which are not desirable in the hand.

The postoperative dressing is extremely important. The dressing should keep the fingers separated with gauze between them. The dressing should immobilize the fingers and the wrist in the position of function, or in any position required depending upon the structures that were repaired. Whenever possible the position of function should be maintained by the pressure dressing. The position of function (Fig. 2) is

Fig. 2. Position of function. Wrist dorsiflexed, fingers in moderate flexion; thumb abducted, moderately flexed and partially opposed.

that of dorsiflexion of the wrist, midflexion of the fingers, and the thumb held in abduction and some forward flexion. The pressure dressing is best applied by mechanics waste in generous amounts surrounding the entire extremity. The tips of the fingers should always be exposed in order to check upon the circulation of all digits.

The aftercare consists of continuous and uninterrupted elevation of the hand until the first three or four days have elapsed. If there is no clinical evidence of infection, the dressing is not removed for ten days or two weeks. If tendons or nerves have been severed and repaired, then immobilization must be continued for a full three weeks to allow for adequate union of the structures. If motor nerves have been severed, corrective splinting should follow the postoperative dressing until re-enervation of the paralyzed muscle has occurred, or until reconstruction procedures are done. Following removal of the dressing, restoration of function to the hand is encouraged by properly guided voluntary exercises, and occupational and physical therapy if available. All of these exercises and therapy should be done under the direction of the surgeon.

DISLOCATIONS

Dislocation of the base of the metacarpals is a common injury and easily missed. X-rays should be carefully examined for this deformity. Frequently, the anterior half of the base of the metacarpal is fractured, making reduction difficult to maintain. Open reduction is usually not necessary, but internal fixation is frequently necessary. This is best obtained by the use of Kirschner wires placed transversely into the adjacent metacarpals to maintain the reduction. Occasionally, a Kirschner wire can be placed obliquely into the carpal bones to maintain reduction. Three weeks' immobilization is usually adequate, but occasionally five weeks will be necessary.

Dislocation of the metacarpophalangeal joint is serious and requires immediate reduction. Frequently, this can be done by closed methods, but if reduction is not successful immediately, an open reduction must be done. Dislocation of the metacarpophalangeal joint usually means that the strong collateral ligaments have been torn. Therefore, the postreduction immobilization should be in the position of flexion to allow these ligaments to heal without undergoing shortening. Three weeks' immobilization is considered sufficient, and after this, motion should be started and should be carried out until a full range of motion has been obtained.

Dislocation of the interphalangeal joint is quite common. Most can be reduced without the use of anesthesia. After reduction has been obtained, the joint should be tested for lateral stability. If the joint is stable, no immobilization is needed. If the joint is unstable laterally, then the joint should be immobilized in a position of flexion for seven to ten days. Following this time, motion should be started. The reason

for early motion in the interphalangeal joints is because of the tightness of the fit of these joints into one another. If immobilization is prolonged, a stiff joint will result.

FRACTURES

Metacarpal fractures near the base usually undergo shortening and rotation. If seen early, restoration of length and alignment is easy and can best be maintained by Kirschner wire fixation. This is done by placing a Kirschner wire transversely into the adjacent stable metacarpal. If internal fixation is not used, it is usually necessary to maintain traction and flexion simultaneously. This means flexion of the metacarpophalangeal joint and the proximal interphalangeal joint in conjunction with dorsiflexion of the wrist.

Skeletal traction is preferred, but occasionally pulp traction or skin traction will suffice. The latter two are not tolerated well and frequently result in complications.

Fractures in the midshaft or neck of the metacarpal (Fig. 3) usually result in angu-

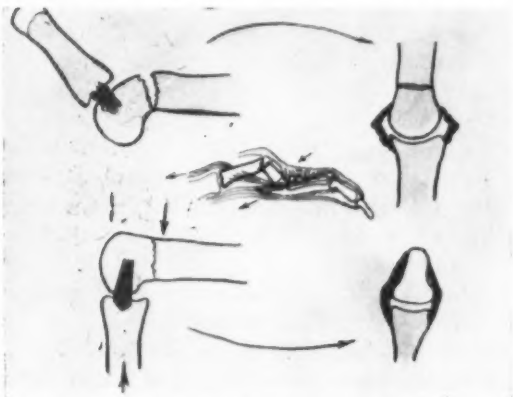

Fig. 3. Metacarpal fractures of shaft or neck showing typical deformity and method of reduction.

lation of the distal fragment with the metacarpal head being prominent in the palm. These may be reduced by flexing the finger at the metacarpophalangeal joint and exerting pressure dorsally on the proximal phalanx, and maintaining pressure on the proximal fragment at the same time. This position may be maintained by a well padded plaster splint or cast. This type

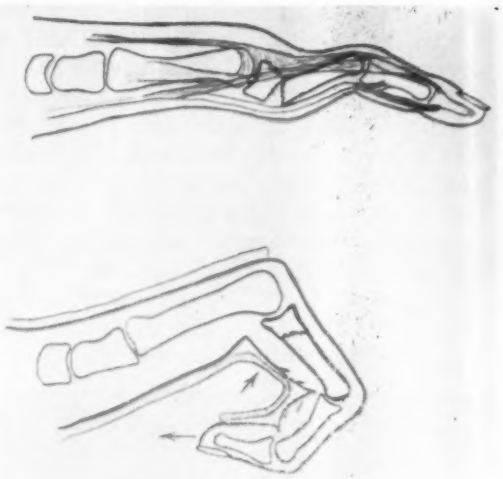

Fig. 4. Fracture of proximal phalanx showing typical deformity and reduction.

of treatment should not be used in elderly individuals because of the danger of obtaining stiff joints from the position of acute flexion of all the joints involved. If reduction cannot be maintained easily then internal fixation with a Kirschner wire placed transversely into a stable adjacent metacarpal is the treatment of choice. If internal fixation is used frequently no immobilization is utilized. The fixation should be continued for two or three weeks, depending upon the clinical signs of union. After this period, motion can be started provided there is no other contraindication to motion.

Fractures of the middle phalanx (Fig. 5) may have two types of deformity. If the fracture is proximal to the insertion of the sublimus tendon, then the distal fragment is brought into flexion by the sublimus tendon. The reduction is done by reversing the deformity and then flexing the metacarpophalangeal joint and proximal interphalangeal joint to release the pull of the sublimus tendon; the distal fragment will be dorsiflexed by the extensor mechanism and the proximal fragment flexed by the sublimus tendon. Reduction of this fracture is done by flexing the distal fragment and maintaining flexion of all the joints, usually by a splint. This fracture

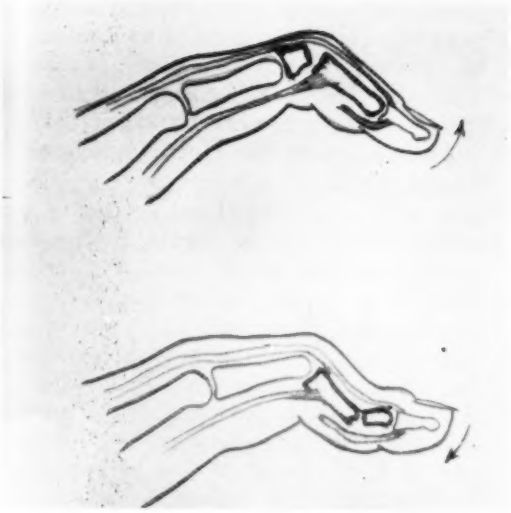

Fig. 5. Fractures at middle phalanx showing two types of deformities produced.

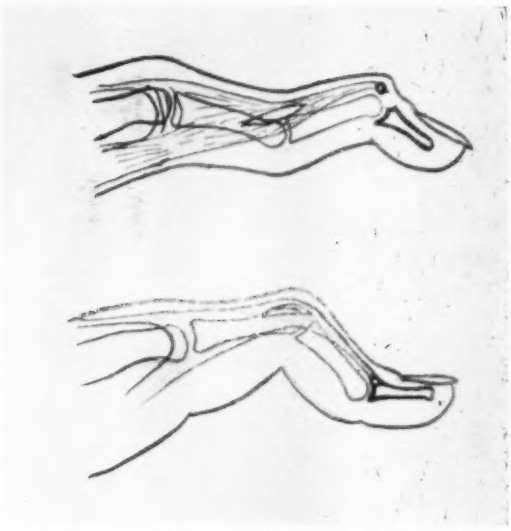

Fig. 6. Avulsion of extensor insertion on distal phalanx, and method of reduction.

heals more rapidly than those of the proximal phalanx, and three weeks' immobilization is usually sufficient. Occasionally, longer immobilization will be necessary.

Fractures extending into the interphalangeal joints usually result in shortening and a lateral deformity. All such fractures should be treated by continuous traction, which is best done by skeletal means. Traction must be maintained until healing has occurred, otherwise deformity will recur. This immobilization should be continued for at least three weeks, and then motion started.

Fractures of the distal phalanx usually are not serious and do not require any more than simple immobilization for five or seven days until swelling and pain have disappeared.

The most important injury to the distal phalanx is avulsion of the insertion of the extensor tendon on the distal phalanx. (Fig. 6) This results in the common baseball or mallet finger and inability to extend the tip of the finger. Reduction is obtained by relaxing the pull of the interosseii and lumbrical muscles, since they are the active extensors of the interphalangeal joints of the finger. Relaxation of this extensor mechanism is secured by flexing the metacarpophalangeal joint, flexing the proximal interphalangeal joint, and hyperextending the distal interphalangeal joint. Immobilization is best done with a small plaster splint and gauze bandage. The gauze bandage is made to adhere to the skin on the dorsum of the finger by the use of tincture of benzoin or Ace adherent. This fracture should be checked with an x-ray, and if reduction is not nearly perfect, an open reduction is indicated. If open reduction is done, the fragment can usually be excised, and the extensor tendon reinserted with a Bunnell type of pull out suture.

BENNETT'S FRACTURE

This fracture dislocation of the carpometacarpal joint of the thumb is the most disabling fracture of the hand. (Fig. 7) The fracture involves a part of the articular surface of the joint and results in a dislocation, partial or complete, of the base of the first metacarpal on the greater multangular. Anatomical replacement of the fragment is essential in order to prevent the development of traumatic arthritis and a painful hand. This can be done by closed means by a well fitting plaster cast, maintaining pressure against the base of the metacarpal, and maintaining traction in

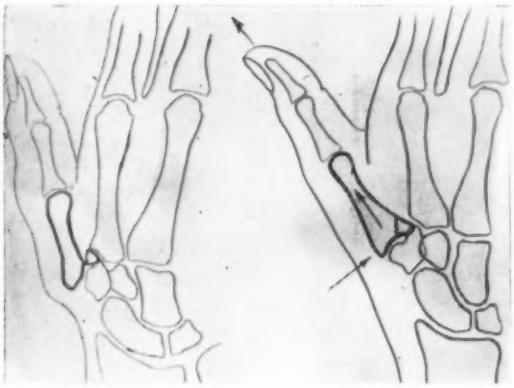

Fig. 7. Bennett's fracture dislocation of first metacarpal showing forces necessary to maintain reduction.

the longitudinal axis in the thumb. Traction is best obtained by skeletal means. Occasionally, skin traction will suffice, but this is not advised. The traction and the pressure against the base of the first metacarpal must be maintained continuously until healing has occurred, which will be at least three weeks. If anatomical reduction cannot be obtained on the first try by closed means, then an open reduction should be done immediately. This should not be delayed. If open reduction is done, the reduction is maintained by the use of Kirschner wires across the fragment or by a small drill hole placed through the two fragments with a single wire loop. After internal fixation, the immobilization is necessary only until skin healing has occurred, which will be between two and three weeks. Motion can then be started and usually returns to normal quickly. If reduction has not been successful primarily, traumatic arthritis usually results rather rapidly and gives a painful thumb on all motion of the thumb. After this has occurred a late reduction is usually impossible, and a fusion of the carpometacarpal joint is necessary. This results in some limitation of motion of the thumb, but gives pain free motion and makes a satisfactory functional thumb.

TENDON INJURIES

As mentioned previously, tendon lacerations at or above the wrist can be sutured primarily, providing the wound condition permits. Tendon lacerations in the base of the palm can also be sutured primarily. A tendon laceration occurring between the distal palmar crease and the tip of the finger should never be repaired primarily. The reason for this is because of the closeness of the fit of the flexor profundus and sublimus in the tunnel formed by the bone of the proximal phalanx and the vaginal sheath surrounding the tendons from the level of the metacarpal head out to the distal one-third of the proximal phalanx. Any attempt at repair of a lacerated tendon in this area will usually result in adherence to the bone or to the tendon sheath at this level and will result in loss of motion of the interphalangeal joint of the finger.

For this reason, it is strongly advised that laceration of the flexor tendon be left unrepaired insofar as the tendon itself is concerned. It is recommended that the debridement be carried out in the usual fashion and the tendon left alone to avoid further damage to the already tight area. After healing has occurred and four to six weeks' time has elapsed, a primary flexor tendon graft can be done. This should be done with the proximal suture at the base of the palm, just distal to the level of the origin of the lumbrical muscle. The tendon graft extends from this level all the way out to the tip of the finger. In most cases the sublimus tendon is excised simultaneously. In only a very few instances will it be possible to do a flexor tendon graft without excising the sublimus tendon. A good general rule to follow is to completely excise the sublimus tendon to give as much room as possible for the tendon graft.

When the tendon graft is done, better results will be obtained if the distal one-half of the proximal annular ligament is excised. The cruciate ligament over the proximal interphalangeal joint should also be excised. The proximal half of the annular ligament over the middle phalanx should also be excised. The cruciate ligament over the distal interphalangeal joint should be excised. The excision of these pulleys at the appropriate places leaves the

only two necessary pulleys in the fingers. This allows the tendon graft to fall away from the bone and have an "angle of approach" to the middle and distal phalanges, and will give a higher percentage of good results than any other type of repair.

Postoperatively, flexor tendon grafts are immobilized for full three weeks in the position of flexion. After this, motion is started and the exercises are graded until at the end of five weeks strong resistive exercises can be given. These exercises may be carried out in conjunction with elastic traction. The postoperative care and exercise is fully as important as is the exact technical detail of flexor tendon grafting.

SUMMARY

The principles of early management of hand injuries have been discussed; they are:

1. Any open wound of the hand is protected immediately and repair is done in an operating room with adequate preparation and instruments available.

2. Careful debridement is done with preservation of as much of the anatomical structures as possible.

3. Primary repair of the nerve lacerations.

4. Primary reductions of fractures and dislocations.

5. Immobilization of the hand in the position of function, unless some other position is necessary in order to relieve tension on a repaired nerve or tendon.

6. Elevation of the hand until swelling has subsided.

7. Restoration of function after healing by properly directed voluntary exercise and by physical therapy and occupational therapy, if available.

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SEVERE INJURIES OF THE KNEE JOINT; DIAGNOSIS AND TREATMENT

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NEW ORLEANS

INTRODUCTION

Of all the joints in the human body none so frequently suffers derangement of function and stability by trauma as does the knee. Its complicated mechanism and intrinsic structure make accurate diagnosis of its many disabilities difficult. Recognition that the knee joint depends for its stability primarily on the muscles around the joint, and secondarily on the ligaments, is fundamental for proper treatment of all injuries to this joint. There are only two positions in which the ligaments in the living human being completely stabilize the knee joint. These are absolute extension, as in standing, and absolute flexion as in complete squatting. For this reason, most injuries of the knee joint occur while the knee is in a position some place between complete flexion and complete extension with the supporting structures of the knee at their minimal mechanical efficiency. Stabilization of the knee in any degree of flexion is accomplished by coordinated muscular action. Therefore, if this action is disturbed or unbalanced, the knee joint becomes unstable whether or not there is a lesion of the articular ligaments. Another important point that is frequently overlooked is the fact that when the knee joint is injured, either by accident or operation, reflex inhibition or rapid hypotonia of the extensor mechanism of the joint takes place, involving most frequently the rectus and vastii muscles. Often a palpable difference in tone can be demonstrated within two hours after injury, and visible, measureable evidence of atrophy of the extensor apparatus is present within five days after in-

Presented at meeting of the Orleans Parish Medical Society, June 12, 1950.

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jury. The disability caused by quadriceps wasting has been termed quadriceps insufficiency. If disabilities are to be reduced to a minimum, it is of paramount importance, then, to overcome this initial reflex inhibition and quadriceps insufficiency early by active quadriceps exercises begun soon after injury and continued until normal muscular strength has been restored. Watson-Jones[1] considers the instruction, "Redevelop the quadriceps, exercise for five minutes hourly throughout the day," to be of utmost importance in the treatment of every injury of the knee joint. This applies to simple strain, with or without traumatic synovitis, injuries of the menisci, strains and ruptures of the ligaments, intra-articular fractures and all injuries of the lower extremity in which treatment by skeletal traction or plaster fixation produces secondary effects on the knee joint mechanism.

DIAGNOSIS

Prerequisite to intelligent treatment of a traumatized knee is accurate diagnosis. This can be accomplished by careful routine examination of every injured knee. The patient should be examined lying on a couch in preference to sitting because muscular relaxation is more readily obtained in the former position. Trousers should be removed so that the condition of the musculature can be observed. Following inspection, the active and passive range of motion of the joint should be tested; range of extension is especially important. Restricted extension is due either to spasm of the muscles or to mechanical blocking of the joint. Cause of the spasm of the muscles may be secondary to fluid in the joint, which can be pushed into full extension without severe pain under slow pressure. If the joint cannot be brought into full extension by steady, slow, continued pressure because of either mechanical obstruction in extension or pain, there is more involved than muscular spasm and fluid. There is probably mechanical derangement of the knee joint. The presence of fluid in the joint is determined by palpation of the quadriceps pouch and the sound of a patellar click as the patella is pushed down against the femoral condyle, where it has then been elevated by fluid. The circumference of both thighs should be obtained at the same level by accurate measurement with a tape. Laxity of the lateral ligaments is determined by abducting and adducting the extended knee. The stability of the cruciate ligaments is checked by flexing the knee and fixing the foot, grasping the proximal end of the tibia with both hands and moving the tibia backward and forward on the femur. Excessive movement in the anterior direction or "drawer forward" is indicative of rupture of the anterior cruciate ligament. Abnormal movement in the posterior direction is indicative of damage to the posterior cruciate ligament. Site of pain and tenderness should be accurately determined; it is particularly important to ascertain whether the tenderness is over the anteromediolateral joint line or over the insertion of the lateral ligament. Physical examination is completed by roentgenograms in the anteroposterior and the lateral planes as well as special notch views, if loose bodies or lesions of the intracondylar notch are suspected.

Frequently, in a recently injured knee, especially if considerable hemarthrosis is present, it is impossible to make an exact diagnosis, and any opinion ventured at this time is apt to be wrong. The wisest policy in such cases is to aspirate the knee joint and remove the blood, apply a firm compression bandage, give the patient adequate sedation, immobilize the joint temporarily either by splinting or traction, and keep the patient in bed with the part elevated for twenty-four hours, by which time the pain and tenderness have become localized so that diagnostic manipulation is possible. If there is still a question of stability of the knee, examination under anesthesia will usually settle without question the presence of rupture of lateral or cruciate ligaments and subsequent treatment can be outlined on this basis.

INJURIES OF THE KNEE JOINT

Injuries to the lateral ligaments of the knee joint are the results of forceful lateral

bending, either in abduction or adduction, producing damage to the lateral ligament on the side opposite the application of pressure. Since the knee is more exposed to strain from abduction than adduction, the internal lateral ligament is injured more frequently than the external. The resulting injury may be a simple sprain, which occurs especially when playing football or skiing. Examination shortly after injury may reveal some fluid in the joint, maximum tenderness at the origin of collateral ligaments, about one inch above the joint line, some limitation of extension and pain on abducting or adducting the knee. There is no lateral instability unless the ligament is ruptured. A firm compression bandage should be applied immediately following the injury. Early application of extension, exercises for quadriceps mechanism and ambulation in a walking cylinder, which protects the ligament but allows active use of the muscles of the joint, are usually sufficient.

Complete rupture of the lateral ligament is a serious injury evidenced by abnormal mobility of the joint in full extension. There is swelling and tenderness and a gap may be palpable in the ligament. The effusion of blood and fluid in the joint is not great because it escapes through the gap into the subcutaneous tissue. The anterior cruciate ligament may be ruptured at the same time as the lateral ligament, and if pain and muscular spasm prevent an accurate diagnosis, then the knee should be examined under anesthesia. There is increasing evidence that prompt, early surgical repair of complete rupture of the lateral ligament gives better results with earlier return to activity than does prolonged immobilization in plaster. Quigley[2, 3] who has cared for the athletic injuries of the Harvard University football team for many years, uses 15 degrees of abduction or adduction as the criterion for immediate surgical repair and his results have been most gratifying. O'Donoghue,[4] who recently reported a large series of patients treated by early surgical repair, considers this the treatment of choice.

Injuries to the cruciate ligament are receiving much less attention than was formerly accorded to them. Hyperextension of the knee may rupture the anterior cruciate ligament or it may avulse the anterotibial spine. Murray,[5] with twenty years of experience at the Presbyterian Hospital in New York, stated that he had never seen a patient with a tear of the anterior cruciate ligament showing any physiologic disturbance of the articular function if the power of the quadriceps mechanism had been restored by active treatment. The posterior cruciate ligament, which is the more important, keeps the femur from gliding unduly forward during weight bearing. It is completely torn when the knee joint is completely dislocated.

Rupture of both anterior and posterior cruciate ligaments is best treated conservatively by aspiration of the knee joint and application of a compression bandage until the acute reaction has subsided. Immobilization in plaster with the knee in 140 degrees of extension and active exercises to maintain the quadriceps mechanism, give satisfactory results in most cases. Immobilization must be maintained from eight to twelve weeks. It is a startling fact that even after complete dislocation, pronounced instability after reduction and restoration of the muscular mechanism of the thigh is not a characteristic observation. Again in the words of Murray,[5] "Simply because a diagnosis of injury of the knee joint has been made is no reason for an operative procedure." The real physiologic disturbance is hypotonia with atrophy of the quadriceps group of muscles. Attention should be centered on this disturbance.

Avulsion fracture of the anterotibial spine may result from a hyperextension injury instead of rupture of the anterior cruciate ligament. Diagnosis is revealed in a routine roentgenogram. Displacements causing no limitation of extension should be treated conservatively. Two or three weeks' immobilization with weight bearing and active exercises to maintain muscular tone are usually sufficient. With gross displacement of the fragments which cannot

be replaced by manipulation, early operation is indicated; the avulsed fragment should be replaced in its bed and maintained by a ligature of stainless steel wire.

Fractures or tears of the semilunar cartilages account for approximately 80 per cent of all internal derangements of the knee. They are most frequently the result of adduction, rotation strain with the knee flexed and the foot fixed. The diagnostic criterion following such an injury is localized pain on the inner or outer surface of the knee joint followed sometimes by rapid accumulation of fluid, with or without locking of the knee joint. The internal semilunar cartilage is involved about eight times as often as the external cartilage. When the cartilage is torn loose from its ligamental attachment at the edge of the tibia, it may be displaced within the joint where mechanical locking prevents complete extension. It is useless to immobilize the knee that is in a locked position. Manipulation, either with or without an anesthetic, should be carried out and in the majority of cases the knee can be brought into complete extension. It is my firm conviction that in its initial occurrence every meniscal injury which has never been locked or can be successfully unlocked, should have a trial of conservative treatment. This consists of the applications of a circular plaster cylinder from groin to ankle with the knee in 180 degrees of extension, to be left in place for not less than three and not more than six weeks, during which time the patient is given specific instructions in exercises of the quadriceps muscles within the plaster. At this time he should be freely ambulatory, bearing weight on the affected leg. If the knee joint cannot be unlocked at the time of the initial injury, the patient should be operated on relatively early and not allowed to bear weight on the flexed knee. If subsequent displacement of the meniscus occurs after conservative treatment, then operative treatment should be undertaken, since further conservative treatment will probably be of no particular value and there is the danger of traumatic arthritis of the involved joint developing if operation is unduly delayed.

Chondromalacia of the patella is receiving more and more attention as the pathologic changes of the condition are becoming better understood. Following trauma, fibrillation or aseptic necrosis of the cartilage of the patella arises with erosion frequently extending down to the subchrondral bone and a corresponding area of degeneration also occurring on the articular surface of the opposing portion of the femur. Symptoms are frequently confused with those of a meniscal injury. The most outstanding manifestation is repeated effusion with pain on extending the knee, particularly on climbing stairs. A catching sensation is often present, but no true locking occurs. Pain can usually be produced by compression of the patella against the femoral condyles and flexion and extension of the knee. If simple measures of physical therapy and temporary immobilization of the joint are not sufficient to prevent periodic exacerbations, arthrotomy with shaving off of the degenerated cartilage or excision of the patella in severe cases is indicated.

It is, of course, impossible in this short time to cover all the other conditions associated with trauma of the knee and generally included under the classification of internal derangements of the knee joint, such as pinching and hypertrophy of the prepatellar fat pads, tear of the coronary ligament, and osteochrondritis desiccans.

In conclusion, however, let me reemphasize the extreme importance of the necessity for a complete, systematic, painstaking, examination of every injury of the knee, attention to early and constant exercise of the quadriceps mechanism, conservative treatment until a definite diagnosis can be established, and immediate surgical repair of complete ruptures of lateral ligaments.

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NONPENETRATING ABDOMINAL TRAUMA

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There is a significant and correctable mortality in abdominal injuries resulting from nonpenetrating forces. This is in no small measure due to inepitude in arriving at an early and, insofar as is possible, accurate diagnosis. The early diagnosis is always difficult-doubt; the late, easy hemorrhage and peritonitis.

In a recent review by us of cases from the Charity Hospital of Louisiana in New Orleans on this subject, 14 of 54 patients were not operated upon and in this group there was a 92 per cent mortality rate. In those who were explored there was a 22 per cent mortality. Aside from a number who were obviously moribund on admission, delay in diagnosis and therapy was an important factor in accounting for the fatalities.

The problems of the acute traumatic abdomen in this machine age emphasize the necessity of establishing a correct diagnosis, and when the diagnosis is in question or doubt, our advice is to operate. Intact skin is no guarantee that an intra-abdominal injury is not present, and the decision to explore an abdomen following nonpenetrating trauma is more difficult than the clear cut obligation in penetrating wounds.

If there is a history of abdominal injury, however slight it may have been, a serious intra-abdominal injury must always be considered. The patient should be hospitalized and must be under constant careful observation. It is advisable to avoid, if possible, sedative drugs, such as morphine, during the period of observation as they tend to mask important symptoms.[2]

A young man may be admitted to the hospital in shock after an automobile accident; physical examination reveals nothing. Following the administration of blood he rapidly improves. Ten days later he returns to work, collapses on the third day and is rushed back to the operating room; a laceration of the liver that nature had temporarily walled off is revealed upon abdominal exploration.[3]

Fractured ribs, pneumothorax or hemothorax, pneumopericardium or hemopericardium must be looked for as these may give evidence of abdominal signs.[4] Acute abdominal conditions can be simulated by hemorrhage into or beneath the rectus muscle.[5] The differentiation between a perforated abdominal lesion and traumatic peritonism should not be entertained at great length; if in doubt, explore.

If shock is present three hours after an abdominal injury, the probability of serious injury to some organ is likely. There may or may not be pain, vomiting, local or general rigidity, tenderness, advance in pulse rate, and shallow respiration, restlessness if due to severe hemorrhage, obliteration of liver dullness and evidence of free fluid in the abdomen. Increase in temperature will follow.

Marked muscle resistance is one of the most reliable signs of visceral injury. Tenderness is often exquisite. Shock of variable degree is most often present. Shifting dullness is usually due to blood but may be due to urine, peritoneal effusion, or intestinal contents.

Peristalsis will usually be absent when auscultation of the abdomen is carried out. A silent abdomen suggests soiling of the peritoneal cavity and almost always demands exploration.[6]

A distended stomach or bladder is more apt to rupture than one that is empty. Subparietal ruptures of the intestines which become incarcerated in hernial sacs occur fre-

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Presented at meeting of the Orleans Parish Medical Society, June 12, 1950.

quently. Sometimes the provocative insult is most trivial.

SPLEEN

Three types of bleeding may occur: massive hemorrhage from extensive laceration; slow oozing from small tears; and delayed from intracapsular rupture of the spleen. If the hemorrhage is marked, certain signs point to the spleen as the probable source: Ballance's sign, dullness in both flanks but the right alone shifting on changing posture; Kehr's sign, referred pain to and hyperesthesia of the left shoulder; and Saegesser's splenic point, a very tender area between the sternocleidomastoid and the scalenus medius on the left side.[7]

In slow and delayed hemorrhage, physical signs may be equivocal. A survey film taken in the recumbent supine position may yield valuable information, a triad of signs described by Solis-Cohen and Levine:[8] markedly distended stomach, jagged serrated greater curvature of the stomach at the cardiac end and pars media, and obliteration of the splenic shadow merging with the perisplenic hematoma.

A perisplenic hematoma may develop, and may reach large proportions, either rupturing or producing symptoms by pressure on adjacent organs. Bailey and Schreiber[9] report a case explored some eight months after injury for a mass in the left upper quadrant which proved to be a walled-off splenic rupture.

LIVER AND BILIARY PASSAGES

Rupture through the capsule, either immediate or with subcapsular hematoma and later breakthrough, produces a hemoperitoneum, and symptomatology is therefore based on this train of events. A central rupture, in which a cavity filled with blood and bile is formed, may heal with scar formation or may later give rise to liver abcess.

If the contents of a central rupture are sufficiently large to cause tension of the capsule, pain may be present which radiates to the right shoulder. Bile in the blood and urine, possibly bradycardia,[10] jaundice, enlargement of the liver, emboli from the liver, and fever can occur. Hemorrhage into the biliary tract, designated as hemobilia,[11] may be discovered by the symptoms of biliary colic and jaundice or its presence later in the stools or vomitus.

If the gallbladder is lacerated, a rare occurrence, bile peritonitis occurs and kills rapidly,[13] unless corrected immediately. Even more rarely a bile duct may be ruptured.[14]

GASTROINTESTINAL TRACT

Blood in the vomitus or stool suggests gastrointestinal injury. Injuries to the hollow viscera, if there is immediate perforation, are usually easily diagnosed. Only a small percentage, however, have air under the diaphragm. Obliteration of liver dullness indicates free gas and is due to a perforation of the gastrointestinal tract.[15]

Rents in the intestines may temporarily seal themselves off while the bowel is reflexly paralyzed. After an interval of time or after taking nourishment peristalsis again sets in. The sealed off tear will begin to leak and peritonitis will follow.

More often in small bowel injuries there is a short mesentery, and in a considerable portion of cases, may not involve immediate perforation of the bowel. There may be a delayed perforation due to necrosis of injured bowel;[14] this occurs in as high as 60 per cent of cases.[16]

The possibility of retroperitoneal rupture of the duodenum or colon with hemorrhage must be kept in mind. Emphysema and cellulitus must be looked for at the time of operation.

Injuries to the duodenum, especially in the retroperitoneal portion, are much more common than is ordinarily supposed,[17] occurring in about 10 per cent[18] of all gastrointestinal ruptures. In extraperitoneal rupture of the duodenum the presence of air about the right kidney by roentgenographic evidence may be diagnostic of this condition.[19] Pain may be present in the testicles.[20]

PANCREAS

The possibility of pancreatic injury should be kept in mind, although the number of cases published in the literature is quite small.[21] Serum enzyme values may mount precipitously when this organ is traumatized,[22] and serum calcium values drop markedly. In Rhodes' series[23] of 35

patients with acute pancreatitis, external trauma was the responsible agent in 15 per cent of the cases. A pseudocyst may develop later as a result of trauma.[24]

RETROPERITONEAL HEMORRHAGE

Extravasation around the sympathetic trunks may produce blush to the lower trunk and extremities; semierection of the penis is sometimes seen and is an ominous sign.[5]

GENITOURINARY TRACT

Rupture of the urethra and bladder, either singly or in combination, is frequently seen as part of crushing injuries to the pelvis. Blood in the urine indicates injury to the urinary tract.

If an injury to the bladder is suspected, a catheter should be passed. If no urine is obtained, a small amount of saline may be injected. If materially less in quantity than what was injected is recovered from the catheter, a rupture of the bladder may be suspected. Air or dye may be injected into the bladder and x-rays taken to confirm the diagnosis.

Ureteral injuries are rare.

Kidney injuries divide themselves into two large groups: (1) Those cases which result in a perinephric spill of blood, urine or both; and (2) intrarenal injuries, such as subcapsular hematomas and intrapelvic lacerations with ensuing hematuria. The first group calls for surgical drainage at the earliest opportunity and nephrectomy if necessary; in the second group, each case is a rule unto itself and surgery should be the last resort.[25]

SUMMARY

This report has stressed early diagnosis and operative intervention in nonpenetrating trauma to the abdomen in the hope of eliminating the sequence: watchful waiting, delay in operation, and death because of associated severe peritonitis and toxicity.

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GRANULAR CELL MYOBLASTOMAS
REPORT OF THREE CASES

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Granular cell myoblastomas are tumors consisting of large cells with a granular cytoplasm which resemble myoblasts, the embryonic precursors of skeletal muscle. They are generally benign, slow growing tumors that usually appear as small painless nodules. They occur most frequently in the third, fourth, and fifth decades of life but as many as 19 cases have been reported in infants.[1] There is apparently no sex relationship. The tumor was first established as an entity by Abrikossoff[2] in 1926. He was convinced that the large, granular cells of the tumor were identical with embryonic striated muscle cells. Previous to this time, the tumor had been identified by a number of various terms; such as, hypertrophy of the tongue, granular protein degeneration of muscle fibers, rhabdomyoma, and xanthoma. Since then approximately 285 cases have been reported in the literature.[1, 3-14]

The 3 cases presented in this report were encountered at Touro Infirmary during the years 1949 and 1950 in a series of approximately ten thousand surgical specimens. We are indebted to Drs. I. W. Kaplan, Frank Cato, Jr. and J. D. Rives for the privilege of reporting these cases.

CASE REPORTS

Case No. 1. A white man, 59 years of age, was admitted to Touro Infirmary, on May 20, 1949, complaining of a corn on the bottom of the fourth toe of the left foot which he first noticed five months prior to admission. This corn had become ulcerated and failed to heal. He had been seen at another hospital where amputation of the toe was advised. The review of systems, past history, and family history were irrelevant. Physical examination revealed an ulcerative lesion which was circular and indurated. It had a yellowish, green exudate over its surface. Under local anesthesia this lesion was excised.

The specimen presented a circular ulcer with a yellowish to green exudate covering its slightly depressed base. The surrounding skin was thickened. On histologic examination, the sections showed a superficial ulcer covered by cornified squamous epithelium. The base of the ulcer and deeper portions of the specimen contained nests of pale staining, vacuolated cells separated by strands of dense collagenous connective tissue (Figure 1). The diagnosis was benign, granular cell myoblastoma of the uniform cell type.

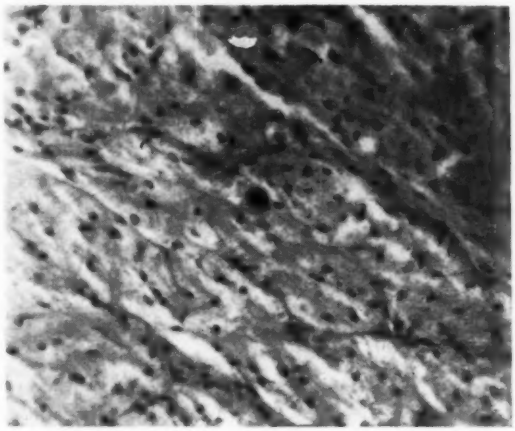

Figure 1. Myoblastoma of toe showing uniform granular cells.

Case No. 2. The second case is that of a white man, 37 years of age, who was admitted to Touro on November 25, 1949, for investigation of a small mass located just below the angle of the mouth on the right side. He noticed this mass when he shaved or laughed hard. He complained of no other annoying symptoms. He had first noticed the mass several months previous to admission and stated that it had grown slightly in size since that time. The review of systems, past history, and family history were not contributory. Physical examination revealed a small, irregular, firm, well circumscribed mass approximately 2 cm. in its greatest dimensions, deep to the skin of face and to the mucous membrane of the mouth. It was located just inferior to the angle of the mouth on the right side of his face. It was freely moveable and not tender. Under general anesthesia the mass was excised.

Grossly the tumor formed an irregular, grayish to brown, firm mass of tissue which measured 2 by 1.5 cm. in its greatest dimensions. On cut surface, it presented a gray to white homogeneous tissue, around which could be seen a moderate amount of brown, soft to rubbery tissue. Histologic examination revealed a poorly defined subcutaneous growth composed of groups and strands of large, pale granular cells growing throughout the connective tissue fibers and striated muscle. No overlying skin or mucous membrane was seen,

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but a small portion of mucous gland was identified. The diagnosis was a benign, granular cell myoblastoma of the uniform cell type.

Case No. 3. The third case is that of a 48-year-old white female who was treated as an out-patient at Touro Infirmary. She had noticed a small painless lump on her tongue for several months prior to admission. A small unobtrusive mass was excised from the tongue under local anesthesia.

Grossly the lesion appeared as a grayish to white tissue which had a glistening appearance and was soft to rubbery in consistency. It was roughly mushroom in shape and had a rugated surface. On cut surface, the specimen was a grayish to yellow color, homogeneous and glistening in appearance. Histologic examination showed a small fairly well circumscribed tumor composed of pale granular cells. The surface was somewhat ulcerated and the adjacent epithelium was thick and cornified. The surrounding tissues showed evidence of chronic inflammation. The diagnosis was that of a granular cell myoblastoma of the uniform cell type.

DISCUSSION

Myoblastomas occur in the majority of cases in locations where skeletal muscle exists although some cases occur in sites apart from skeletal muscle. The most common locations are the tongue, subcutaneous tissues, breast, maxilla and striated muscle. Less common sites are the vocal cords, lips, mandible, mouth, external auditory canal, trachea, bronchi, vulva, and pharynx. The tumors are usually small, averaging 1 to 2 cm. in size. They appear as small lumps or raised indurated patches. The cut surface may vary from a white to a gray or tan color. The tumor does not possess a capsule although at times the surrounding tissues may be compressed to give the impression of encapsulation. Histologically, one can divide the myoblastomas into two main types; namely, the benign uniform cell and the malignant pleomorphic cell. The benign uniform cell type occurs six or more times as frequently as the malignant pleomorphic variety. At times it may be difficult to separate the pleomorphic types from the more common rhabdomyosarcomas. Psuedo epitheliomatous hyperplasia of the overlying epithelium is a common finding in myoblastomas occurring beneath an epithelial surface. This is especially true in tumors of the tongue where a diagnosis of squamous cell carcinoma has not uncommonly been made without recognizing the underlying myoblastoma. At present, it is not possible to make a dogmatic statement as to the nature of the cells in myoblastomas. Their similarity to embryonic striated muscle led Abrikossoff to give them the name myoblastomas. However, their occurrence in sites apart from striated muscle is difficult to explain. It is very difficult to demonstrate cross striations as found in striated muscle in these tumors. Some[1] consider the granular cells to represent storage cells containing protein metabolites analogous to xanthomas. Fust and Custer[10] believe that the tumors are of neural origin and that the term, granular cell neurofibroma, should replace our present terminology. Local excision is adequate treatment for the benign uniform cell type. The malignant pleomorphic variety requires radical surgical measures similar to those used in dealing with rhabdomyosarcomas.

SUMMARY

Three cases of benign granular cell myoblastoma occurring on the toe, face, and tongue are reported.

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AN EVALUATION OF BANTHINE IN ULCER MANAGEMENT

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Perhaps complete vagotomy is conducive to ulcer healing.[1-3] This surgical procedure enjoyed its recent period of enthusiastic reincarnation. Inhibiting reports confirmed early scepticism. A justifiably suggested moratorium by the investigating committee of the American Gastroenterological Association has been spontaneously accepted. Enthusiasm has waned; medical or chemical vagotomy is frequently referred to, Banthine has been heralded a means to this end.[4]

Of the gastric secretory inhibitors atropine and its derivatives have historical precedence; therapeutic efficacy is debated.[5-8] Tetraethyl-ammonium autonomic ganglion effect reported by Acheson and Moe,[9] substantiated in Shay rat experimentation[10] and suggested efficient in a single clinical observation[11] stimulated Cayer and his associates[12] to further clinical evaluation in peptic ulcer patients. The adjunctive value of TEAC in achieving pain relief in intractable cases has been convincing.[13, 14] The anticholinergic first prepared by Robinson and Cusic by the quarternization with methylchloride of B diethylamino-ethyl xanthene-9-carboxylate hydrochloride the bromide salt of which, a nonhygroscopic white crystalline powder, was designated banthine bromide.

Orally effective, atropine-like in action on the postganglionic nerve endings of the parasympathetic system banthine inhibits vagotonia. Sympathetic and parasympathetic autonomic nervous system ganglion blocking actions are evident in experimental studies. In addition interference with visceral sensory afferent impulses is hypothesized. Cessation or marked diminution of gastric contraction waves in dog experimentation and in human observations has been confirmed.[16] Secretory influence is apparently inconstant. Inability to produce a negative secretory response to insulin is confirmed[4] discounting Grimson's early counter claim. Night secretory suppression is anticipated. Smith and his associates[4] reported a variation of 30 to 86 per cent. Benjamin *et al*[8] encountered a secretory influence only comparable with that of atropine. In our clinical observation the banthine influence does not always extend to secretory inhibition even in patients symptomatically and radiographically benefitted. Further we have recorded symptomatic effectiveness in hypochlorhydric ulcer patients. In this debate, however, it is obvious banthine is better tolerated in effective dosage and has a more prolonged and constant action than atropine. Gastric hypotonicity coupled with diminution in gastric secretory volume and acidity led to early and enthusiastic conclusions of prompt ulcer healing.[16-18] Banthine induced gastric hypomobility is its important and consistent action in relation to its therapeutic efficacy in our personally observed success in the ulcer patient.

Pain relief in instances of disease elsewhere than the stomach, such as in painful pancreatic calculosis, leads one to wonder in such instances whether it be relief of spasm, secretory inhibition, or interference in visceral afferent impulses. Voluminous and comprehensive yet incomplete is our knowledge experimentally and clinically of banthine. It is beyond the scope of this manuscript to more than refer to potentialities being explored within the scope of gastroenterology in "nonpeptic ulcer" entities. Our present interest is confined to experiences with banthine bromide orally

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Banthine was generously supplied by Irwin C. Winter, M. D., Clinical Research Division, G. D. Searle and Company. Aided by a grant from the Medical Research Fund.

in a clinical study of 162 peptic ulcer patients.

DOSAGE

Individualization and tolerance dictate dosage. Presumed requirement of 100 mgm. every six hours[17] "around the clock" was achieved in 53 per cent of our patients; an additional 12 per cent acquired tolerance permitting increase to this quantity. Only 8 per cent could maintain a twenty-four hour total of 800 mgm.; of these only 2 patients tolerated an increase to 1200 mgm. per twenty-four hours.

We have adopted a schedule of 50 mgm. at six hour intervals during activity and 150 to 200 mgm. on retiring and 100 mgm. six hours thereafter. This regime was achieved in eighty-two per cent of our cases with minor adjustment to fit individual requirement and tolerance and was deemed adequate for symptomatic relief, gastric secretory inhibition and suppression of gastric hypertonicity. That symptomatic relief is achievable by minimum dosage but rapid ulcer healing is accomplished only by maximum dosage has been hypothesized. To this end we have concurred in administration to full tolerance.

Where active therapy ends, maintenance dosage begins and eventually when the drug may be discontinued is not established. The suggestion that radiologic evidence of ulcer healing permits election to begin a maintenance of approximately one-half of the therapeutically efficient dose may be acceptable. Maintenance is rationalized by recurrence potentiality since no etiologic factor is eradiated. Grimson indicates stress periods make imperative reversion from maintenance to therapeutic dose levels. Our maintenance program departs from that of Grimson and others. We favor gradual reduction in activity period dosage with their ultimate elimination but a continued large nocturnal dose of 100 to 150 mgm. with a supplemental later night dose should it be indicated.

TOXICITY

There are no reports of human toxicity in the therapeutic or maintenance dose levels. Adequate animal experimentation established impunity.[19-21] There is no evidence of accumulation. However, since there is agreement that maintenance therapy over a long term is necessary and when we insist that any ulcer program should be exacted for two asymptomatic years it becomes apparent that no statement can yet be made as to its toxicity in an adequate ulcer management. In our twelve month follow-up and an experience with 162 studies we consider banthine relatively innocuous. We have encountered only 1 instance of significant toxicity.

Objectionable salivary secretory suppression occurred in 78 patients; of these 56 found it desirable to restrict dosage to 75 mgm.; 12 considered 50 mgm. their maximum dose; 2 declared this side effect so disconcerting they refused to continue therapy. In general improved tolerance was typical and cooperative patients were able either to maintain or increase their dose after 72 hours.

Mydriasis was rare in our series. Only 8 patients found it disturbing; 2 declared it an indication for dosage reduction; to only 1 did it necessitate discontinuance.

Dysuria was surprisingly prevalent. Voiding just prior to each dose has prevented this. We did not, however, encounter retention. Eneuresis occurred in 3 patients. Eight males complained of difficulty with starting micturation and diminished power of stream; of these only 1 had demonstrable prostatic hypertrophy. Five females encountered difficulty starting urinary flow and sensation of incomplete evacuation confirmed by catherization. Incontinence of urine occurred in 1 female.

Constipation without dyschesia was claimed by 102 patients. Dyschesic constipation was present in an additional 36 individuals. Constipation is common in ulcer patients.

Pyrosis though always mild was a source of apprehension in 86 patients. In 32 of these individuals this discomfort predated banthine therapy but was estimated to be accentuated.

Pyloric obstruction may be accentuated by banthine induced gastric hypotonicity in

pyloric obstruction. Using the drug in only uncomplicated cases, free of radiologic or aspiration evidence of retention, we have not precipitated demonstrable gastric retention. Grimson, reporting this side effect, advises adjunctive gastric aspiration and dietary restriction without discontinuing banthine. If the obstructive phenomenon is purely due to edema he anticipates relief in seventy-two hours.

Vertigo and weakness have been mentioned by 6 patients.

From our observations no true contraindication to banthine exists other than an idiosyncrasy that might permit a curare-like reaction. Our experience with a single such instance will be reported. When administered in the presence of prostatic obstruction, and pyloric obstruction reasonable precaution becomes necessary. Glaucoma is a specific contraindication to banthine.

THERAPEUTIC APPLICATION

In concurrence with others we consider it inadvisable to speak of ulcer "cures." In a study of 200 instances of duodenal ulcer recurrence after a twelve month period of symptomatic and radiologic "inactivity" the crater was found at the site of the original lesion in 86 per cent[23] indicating to us the probability that complete healing of the ulcer had not occurred. In 1949, a critical analysis of our management of duodenal ulcer patients revealed a comparable result in two ten year periods ending in 1939 and 1949 respectively, indicating no evidence of improvement in our therapeutic program despite the "new ulcer drugs" available in each period.

THERAPEUTIC RESULTS ON DUODENAL ULCER PATIENTS UP TO 1949

(A 20 Year Study)

49 per cent classified as "cures."

19 per cent are "satisfactory results."

11 per cent are uncomplicated unsatisfactory results.

21 per cent are complicated poor results.

Our conclusion in this publication, "The physician can hardly be content and should continue search for the unknown that will increase tissue resistance since he cannot permanently control gastric hypersecretion and hypertonicity" left us susceptible to the enthusiasm that surrounded banthine's inception as an ulcer "cure." But our reservation expressed, "we should not endorse, without evaluation, the constant influx of therapeutic panaceas thrust upon the ulcer patient" forced us to a conservative controlled study.

In our series we had 162 uncomplicated duodenal ulcer patients. The average age was 43 years. There were 112 males and 50 females. Banthine was administered according to our therapeutic and maintenance dosage schedule. The follow-up has been too short and the control too inadequate on this group of patients for accurate therapeutic evaluation. However, it afforded an opportunity to observe dosage tolerance and interesting side effects herewith reported. (Fig. 1)

In addition, several conclusions have become obvious:

1. Pain relief when achieved was prompt and complete, that is, within an average of thirty-eight hours. One hundred and thirty six patients were completely relieved, 12 had ameliorated and less frequent discomfort, 11 claimed no pain relief, 3 patients developed complications.

2. Nocturnal waking pain or other ulcer discomfort present in 116 cases was aborted in all but 7 instances. Two had severe persistent pain necessitating subsequent surgical election; the other 2 are intermittently relieved by alkali.

3. Nausea and vomiting, common to 86 cases was relieved in all but 1 patient.

4. Pyrosis present in 32 patients was not relieved and further 54 additional complaints of pyrosis were precipitated by banthine.

Being a sceptic one of us elected to follow personally the initial 30 uncomplicated duodenal ulcer patients placed on banthine. These patients were controlled by an equal number of ulcer patients given banthine-like placebo and a third group of 30 ulcer patients were placed on our usual ambulatory ulcer program. All were male patients. The duration of ulcer symptomatology in

BANTHINE SIDE EFFECTS
-162 PATIENTS-

1. Objectionable salivary suppression 400 mgm. per 24 hrs = 78
   300 " " " 56
   200 " " " 12
   100 " " " 2

2. Mydriasis- significant in only 8 patients

3. Dysuria occured in 8 males and 5 females

4. Constipation without dyschesia 102 patients
   with dyschesia 36 patients

5. Pyrosis (mild) 86 patients

6. Vomiting as evidence of gastric retention- *no instance*

7. Vertigo and weakness *(mild)* 6 patients

8. Curare-like reaction (800 mgm. per 24 hrs) *1 instance*

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the banthine group averaged eight years with an age average of 44. The placebo group averaged eleven years previous ulcer difficulty with an age 42 averaged. The third group recognized ulcer symptoms 9.5 years, average age was 46. The entire group of 90 patients have been under observation for eleven months but are tabulated for nine months. (Fig. 2)

The results are tabulated, the comparative study is not impressively in favor of banthine but there are five additional factors which greatly influence the situation. (Fig. 3)

1. The symptomatic response in those patients relieved by banthine was very prompt, an average of thirty-two hours in this group; it was seventy-six hours in the placebo group and seventy-four hours in the conventional ulcer therapy 30.

2. The average disability measured in hours of work absence for gastrointestinal symptomatology was forty-six hours for the banthine group, fifty-six hours for the placebo patients and forty-eight hours for the conventionally managed cases.

3. Recurrent or intermittent ulcer symptomatology in the banthine group with the exception of pyrosis was less frequent and less severe than before therapy. It was more frequent and more severe in the placebo group. The conventionally managed patients found their discomfort as frequent but less severe than before therapy.

4. Voluntary adjunctive alkalies were sought out by only 2 banthine patients as contrasted with 22 of the placebo group and 6 of the conventional therapy cases.

5. Only one patient on banthine refused to continue therapy because he felt it ineffective; we elected its discontinuance in 1 additional case electing surgery. In the

THERAPEUTIC EVALUATION

90 UNCOMPLICATED DUODENAL ULCER MALE PATIENTS

(9 months follow-up - 30 patients each group)

SYMPTOM	BANTHINE GROUP		PLACEBO GROUP		CONVENTIONAL ULCER REGIME	
	AVERAGE AGE-44 YRS. DURATION 8 YRS.		42 YRS. 11 YEARS		46 YRS. 9.5 YRS	
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
PAIN-MILD Intermittent	10	2	12	3	11	4
PAIN-MODERATE "	18	1	14	2	14	1
PAIN-SEVERE Persistent	2	1	4	2	5	2
NOCTURNAL PAIN	22	2	19	3	26	1
VOMITING	9	1	11	2	13	1
HEMATEMESIS OR MELENA	0	2	0	1	0	0
PYROSIS	12	26	9	1	16	2
WEIGHT LOSS	21	4	16	1	18	0

ADVANTAGES OF BANTHINE THERAPY

(9 MONTHS EVALUATION - 30 PATIENTS)

	WITH BANTHINE	WITHOUT BANTHINE
1. Prompt relief = *average*	32 hours	75 hours
2. Less work hour disability	46 hours	52 hours
3. Less frequent recurrent symptoms	4 episodes	8 episodes
4. Less need for adjunctive therapy	2 patients	28 patients
5. Refusals to continue therapy	1 patient	6 patients

placebo group 6 patients discontinued therapy and a seventh patient had surgery. In out routine group of those patients (9) with persistent or recurrent symptoms, 4 were rendered asymptomatic by the adjunct of banthine.

Roentgenologic evaluation at three month intervals has been exacted and is tabulated. Though not conclusive the evidence favors banthine. It is not our opinion, however, that radiologic interpretation of activity or of crater healing is conclusively accurate. (Fig 4)

In a previous study quoted,[23] we observed ulcer recurrence in the same crater site in 86 per cent of patients, leading us to hesitancy in a belief that complete healing had probably ever occurred. It has also been our experience to have a radiologic opinion of an active duodenal ulcer creater in individuals who have no symptoms referrable thereto.

DISCUSSION

The patient's response to banthine is impressive; they are, in most instances, well pleased. Appreciating the fact that our patients on banthine had no supplemental diet or medication, we are impressed with the efficacy of banthine as a therapeutic adjunct to ulcer management. In reservation we favor a longer follow-up for we are aware that recurrences though most frequent in the first two years may occur at any time. We feel there are ulcers which because of disturbed anatomy and physiology, extensive cicatrization and penetration cannot conceivably completely heal. We are hesitant to accredit curative powers to the drug since we have observed spontaneous ulcer response before as well as in the present placebo group. Pain relief is the most constant and impressive result and unquestionably the promptness, consistently and relative permanency of this relief is dramatic. We cannot concur in the election to use banthine in the presence of known complication since we have observed hemorrhage and penetration to occur during therapy. We endorse the continued evaluation of the drug in maintenance with the impression that we can now control hypertonicity as a factor in ulcer occurrences and recur-

RADIOLOGIC FOLLOW-UP

GROUP		3 mos.	6 mos.	9 mos.
BANTHINE	Unchanged	24	12	7
	Improved	4	7	9
	Crater Healed	2	11	14
PLACEBO	Unchanged	24	21	15
	Improved	5	6	8
	Crater Healed	1	3	7
ULCER PROGRAM	Unchanged	21	9	6
	Improved	6	12	12
	Crater Healed	3	9	12

rence. We do not feel that there is gained through banthine any reassurance that the basic principles of ulcer management have been dramatically altered.

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TREATMENT OF DUODENAL ULCERS WITH BANTHINE

A STUDY OF FORTY CASES

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ALICE BAKER HOLOUBEK, M. D.

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SHREVEPORT

A new drug, banthine,* brand of methantheline bromide, has been introduced recently for the treatment of duodenal ulcers. It is an anticholinergic agent which tends to block the vagus effects on the stomach, decrease the gastric acidity, and decrease hypermotility.

It is a quaternary amine which has been shown to have an atropine-like effect in that it inhibits muscular contraction stimulated by acetylocholine, inhibits salivation, and causes mydriasis. It also blocks the autonomic ganglion of both the sympathetic and parasympathetic autonomic nervous systems. Extremely large doses have a curare-like effect on the skeletal muscle.

Longino, Grimson, Chittum and Metcalf,[1] using human subjects, have shown that a moderate rise in pulse rate and a slight rise in blood pressure occurred after the oral administration of 100 mgms. of the drug. No changes in the skin temperature were noted. It was shown that gastric motility was inhibited fifteen to twenty minutes after oral administration, the effects lasting for about six hours. Emptying time of the stomach was prolonged and decreased motility of the small bowel and of the colon was noted. There was about a 90 per cent decrease in motility of the small bowel and the colon after the oral administration of banthine.

Grimson, Lyons and Reeves[2] reported 100 cases in which banthine was used. There was a marked decrease in the incidence of pain, vomiting, and hemorrhage, following therapy, and of the 62 cases with the conventional indications for surgery prior to therapy, only 5 had to undergo operation. Most of the patients maintained on banthine were placed on unrestricted diets, and were given no antacid therapy.

Our group started using banthine in January 1950. For a while we restricted its use to those cases of duodenal ulcer which had failed to respond to the usual dietary and medical management. All of these cases were considered candidates for surgical therapy. Since larger quantities of banthine have been available, our use of the drug has been extended to cases with uncomplicated peptic ulcers. The majority of these patients were in constant pain and were unable to carry on their daily work. After a few days of treatment with banthine, their entire outlook was changed. They were active, alert, and enthusiastic

*Furnished by Dr. Irwin C. Winter, Director of Clinical Research, G. D. Searle & Co.

about their work. About 50 per cent of the patients were on a bland diet. The others were on unrestricted diets and a number of them continued to smoke, and some have taken alcohol without development of any new symptoms.

In table 1 are shown the patients with duodenal ulcer who failed to respond to prolonged medical and dietary management and were considered candidates for surgery. The patients have been on treatment from two to thirty-two weeks, with an average of twelve weeks. In the majority of cases, the symptoms were relieved almost immediately after the first dose of banthine. All of these cases were started with two tablets every six hours, at 6:00 A. M., 12:00 Noon, 6:00 P. M. and 12:00 P. M. This was the original recommendation in the research program. However, at present they are being started on one tablet (50-mgm.) every six hours, and were finally relieved. A few had occasional mild pain which was nothing compared with the initial pain they had suffered. The patients were transformed from chronic complainers to alert, active individuals who were able to do their work. Only 1 patient was hospitalized for a week. The others were treated as ambulatory patients. Nine of the patients have been re-x-rayed. At the end of one month 2 were healed. At the end of two months, 5 were healed and 2 were healing. We feel that x-raying them at the end of two months will probably show the best results.

There were 13 patients with duodenal ulcers that were not considered intractable and not considered candidates for surgery. The results in these are shown in Table 2. Of these, 2 were healed as shown by x-ray and the drug has been stopped.

TABLE 1

DUODENAL ULCERS WHO FAILED TO RESPOND TO PROLONGED MEDICAL AND DIETARY MANAGEMENT AND WERE CONSIDERED CANDIDATES FOR SURGERY

Male	24	Ages 28 to 67	White	Average Age 45
Female	3	Ages 31 to 46	"	Average Age 39

Symptoms	Before Banthine	After Banthine
Pain:		
Intractable	17	0
Intermittent	5	0
Occasional	0	8
Vomiting:		
Intractable	5	0
Occasional	3	0
Hemorrhage:		
Major	2	0
Minor	0	0

SIDE EFFECTS

Practically all of the patients had noticed initial dryness of the mouth, coming on immediately after taking the drug. This continued for some time and became disagreeable to some patients. However, the patients became quite accustomed to the sensation. The bitter taste is quite marked and disagreeable. A mydriasis developed in most of the patients, and several of them had difficulty reading. One patient, a mechanic, cannot take his noon dose because it dilates his eyes so that he cannot see what he is doing. He takes antacids at this time instead of banthine.

Constipation is another side effect which develops in some patients. This may be corrected by the use of mild cathartics. Difficulty in urination results from the parasympathetic inhibition of banthine on bladder muscle. We had 3 male patients who had such severe urinary retention that the drug was discontinued. We had 3 female patients who also complained of difficulty in urination, but after several days, this subsided. About 6 male patients also com-

TABLE 2

DUODENAL ULCERS TREATED IN FIRST OR SECOND ATTACK OF SYMPTOMS AND NOT CONSIDERED CANDIDATES FOR SURGERY

Male	9	Ages 22 to 54 yrs		White	Average Age 35
Female	4	Ages 20 to 65 yrs		"	Average Age 41
Duration of symptoms	1 to 60 months	Male			
	1 to 36 months	Female			

SYMPTOMS	BEFORE BANTHINE	AFTER BANTHINE
Pain:		
Intractable	3	0
Intermitten	8	0
Occasional	0	3
Vomiting:		
Intractable	1	0
Occasional	1	0
Hemorrhage:		
Major	2	0
Minor	0	0

plained of slowness in starting the stream, but continued on with their medication.

On three occasions, patients have noticed severe epigastric cramping fifteen minutes after taking banthine. Two patients had taken it for two months before these symptoms occurred. Several doses were omitted, then the drug was started again, but the cramps did not recur. One patient with long standing duodenal ulcer was given the drug elsewhere and took two tablets at 10:00 A. M., 4:00 P. M., 10:00 P. M., and 4:00 A. M. Immediately after this, he developed severe cramps. The dose was changed to be taken at 6:00 A. M., 12:00 Noon, 6:00 P. M. and 12:00 P. M. and he had no more cramps. It was found that giving the drug on this schedule brought the best results.

SUMMARY

Banthine has been used as the sole treatment of 27 cases of duodenal ulcer who were being considered for vagotomy and gastric resection, and 13 cases of simple duodenal ulcer. Of this group only 13 patients have occasional pain. Nine of the ulcers are healed and 2 others show healing on x-ray. Banthine is an effective drug for the treatment of duodenal ulcer.

It must be remembered that the psychosomatic aspects of duodenal ulcer must also be considered. However, the relief of pain in the patients makes them more amenable to psychotherapy.

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COMPLETE AVULSION OF OPTIC NERVE AT THE DISC

A CASE REPORT

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NEW ORLEANS

Injuries to the optic nerves are not uncommon, but only a few[6] references to a complete avulsion of the optic nerve could be found upon extensive search of the literature. This case is of value not only because of its rarity, but also because fundus photographs were taken.

Presented at meeting of the E. E. N. T. Section of the Charity Hospital Visiting Staff and the E. E. N. T. Club of New Orleans, May 17, 1950.

CASE REPORT

L. M., a thirteen year old negro boy, came to the Eye Clinic at Charity Hospital in New Orleans, with the history of falling off of a porch at age three. He had, at the time of the fall, a vertical irregular laceration of the skin along the lateral edge of the right orbit extending onto the forehead and down onto the cheek. No involvement of the right eye was noted at the time and the laceration was sutured by a general practitioner and healed uneventfully. Recently, the boy occluded the left eye for a moment, and noticed that he had no vision in the right eye.

Examination revealed vision of 20/15 O. S. and no light perception O. D. The above mentioned scar was present. No irregularity of the orbital margin could be palpated. The conjunctiva, sclera, cornea and iris O. U. showed no abnormalities. Finger tension O. U. was normal. The pupil O. S. was 3 mm. in diameter and reacted to light and accommodation homolaterally and consensually. The pupil O. D. was dilated to 6 mm. and fixed.

Extraocular muscle examination revealed a concomitant exotropia of 15 prism diopters (Hirschberg) with normal ductions. However, there was no convergence, O. D. Maddox rod or other binocular tests were not done due to the absence of vision O. D.

Ophthalmoscopic examination O. S. revealed no abnormalities of the media or fundus. The right eye showed a clear lens, and anterior vitreous. The optic disc, however, had been replaced by a large black pigment spot speckled with pink and white scar. Long thin tapering white and black pigmented glial tissue extended out from all sides of this and into the vitreous producing a sunburst effect. Some of these long strands extended out to the retinal periphery. The normal retinal vessels were not seen, but an occasional very small vessel could be distinguished, especially in the retinal periphery.

(See Figures 1 and 2)

Refraction (atropine) showed:

1. Confusing retinoscopy O. D.
2. Retinoscopy results O. S. $+1.50^{s} +.25^{c} \times 90$
3. Trial 20/30 with pin hole O. S. } Snellen
   20/30 with $+1.50^{s}$ O. S. } Chart

Post:

20/15 (without glasses) O. S.-illiterate E chart
20/15 with $+1.50^{s}$ O.S. -illiterate E chart

Rx: O. D. plano
O.S. $+1.00^{s}$

Check: Vision O. S. 20/15 (illiterate chart)

Laboratory Reports: Hematocrit 42; urinalysis, negative; fasting blood glucose 91 mg. per cent; blood Wasserman negative; Mantoux test (1:1000) moderate reaction in twenty-four hours and moderate reaction in forty-eight hours.

X-ray Reports: EPA chest—cardiac silhouette within normal limits. There is slight accentuation of pulmonary vascular shadows. No definite evidence of infiltration. Views of the optic foramina show no evidence of significant abnormality. Waters' and lateral view of the paranasal sinuses: "The sinuses are clear. There is no evidence of orbital fracture."

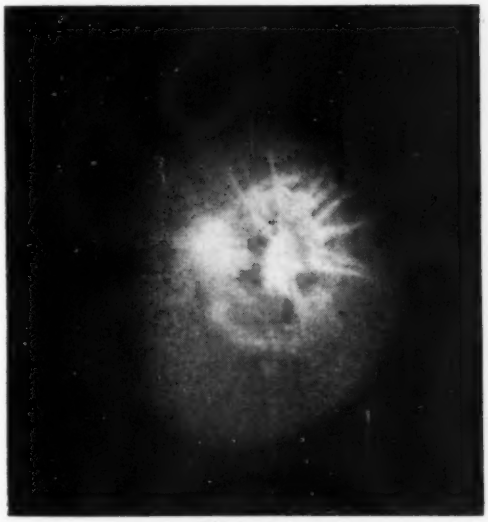

Figure 1

Figure 2

COMMENT

We postulated that on falling the patient landed upon some protuberance, producing a gouging effect in the orbit, lateral to the bulbus oculi. This produced enough pressure to the side and behind the eyeball to momentarily proptose it, and therefore, tear the nerve from its anterior attachment. Any external ocular injury may easily have been

overlooked because of the blood from the large laceration, especially in a child and when not suspecting such an injury. Whether or not the nerve sheaths were injured of course could not be determined, especially as the scar covered more area than the original optic disc.

The attenuated vessels in the fundus probably were fed by collaterals which developed later.

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PANTOPAQUE MYELOGRAPHY IN RUPTURED INTERVERTEBRAL DISK: CORRELATION WITH OPERATIVE FINDINGS*

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INTRODUCTION

Pantopaque myelography is now a routine aid in the diagnosis of ruptured intervertebral disk in the lumbar area. Although visualization of the dural sac with opaque media has been practiced for over a quarter of a century, there remain some points to be emphasized concerning the relationship of the x-ray examination to the anatomical findings at operation. It is the author's purpose to discuss the accuracy of pantopaque myelography in the light of this relationship. The cases included in this study represent a consecutive series seen in civilian practice.

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CASE REPORTS

One hundred and sixty cases in which the clinical history and the physical findings suggested the presence of a ruptured intervertebral disk were studied by myelography. Of the total of 160 patients examined, 66 showed positive evidence of a space-occupying lesion, 21 patients had suggestive findings, and 73 patients had negative studies. (Table 1)

Positive—Of the group of 66 patients who had definite myelographic evidence of a space-occupying lesion, 54 underwent surgery. The other 12 were treated conservatively, either because of refusal of operation, or because of minimal disability. Of the 54 patients operated upon, 51 or 94 per cent were found to have demonstrable pathology, 50 had ruptured intervertebral disks and 1 had a spinal cord tumor.

TABLE 1

	Total Number of Cases	Operative Findings: Disk	Tumor	Negative	Conservative Therapy	% Accuracy
Positive	66	50	1	3	12	94%
Suggestive	21	8	1	2	10	82%
Negative ..	73	5	0	0	68	93%

Suggestive—In the group of 21 patients whose myelographic findings were suggestive of the presence of a ruptured intervertebral disk, 11 were operated upon. The remaining 10 patients were not operated upon because it was felt that the myelographic findings in the light of an inconclusive clinical picture were not sufficient to warrant surgery. Of the 11 suggestive cases that were explored, 9 were found to have demonstrable pathology; 8 had ruptured intervertebral disks and 1 patient had a spinal cord tumor. In 2 instances, the exploration failed to reveal a cause for the pain.

Negative—The 73 patients who presented negative myelographic studies were variously treated. In spite of the negative x-ray findings, 5 of the 73 patients had signs and symptoms of such severity that exploration was mandatory. In each of these instances, a ruptured intervertebral

disk was found and removed. In the remaining 68 cases, other disease was considered to be the cause of the clinical picture.

Sex ratio—The sex distribution was male—135 and female—25. Of the 135 males examined, 54 had positive myelograms, 18 had suggestive myelograms, and 63 had no evidence of intervertebral disk disease. Among the 25 females studied, there were 12 positive myelograms, 3 suggestive myelograms, and 10 negative studies.

Multiple herniations—In 3 cases there were multiple herniated intervertebral disks. 2 patients having 2 ruptured intervertebral disks, and 1 patient having 3 ruptured intervertebral disks. The diagnosis in the cases with 2 herniations was established on the initial myelogram. In the case of 3 herniations, only a single defect was seen on the initial myelogram and this was removed at operation. Nine months later a recurrence of symptoms prompted a second myelogram and it was at this time that the other 2 ruptured intervertebral disks were disclosed. These, too, were removed at a second operation.

DISCUSSION

The authors have classified myelographic studies into three categories: (1) negative; (2) suggestive; (3) positive. A negative myelogram is one in which a well filled symmetrical opaque column measuring over 16 mm. in width is free from filling defects. Suggestive myelograms are those in which there is a hesitation in the flow of the pantopaque column over a given interspace, or a root sleeve defect. The positive myelogram shows a definite posterior or posterolateral defect in the pantopaque column as outlined fluoroscopically or radiographically.

The negative myelogram may appear in the anteroposterior view as an even tubular column or as a ringed tubular column with zones of constriction corresponding to the intervertebral spaces. In the majority of cases, the pantopaque column assumes a smooth tubular appearance from the first through the third lumbar interspaces. As the column passes the fourth lumbar interspace, the constriction ring appears and the axillary pouches (root sleeves) come into view. These two features are fully developed at the fifth interspace.

In the lateral view, the normal dural sac as seen in the negative myelogram exhibits a smooth undulating course with shallow indentations corresponding to the intervertebral spaces. As seen in the lateral projection, variations in the posterior border of the pantopaque column are seldom of significance since the intervertebral disk lies anterior to the dural sac. These posterior defects formerly ascribed to a hypertrophy of the ligamentum flavum were found to bear no constant relationship to this structure at operation. However, a tumor of the cauda equina situated posteriorly or a ruptured intervertebral disk that rarely comes to lie posterior to the dural sac may produce such a filling defect, but in such an event, other facts usually lead to the proper diagnosis.

As Arbuckle *et al*[1] have pointed out, a herniation of the intervertebral disk may occur in the presence of an abnormally narrow column (one less than 16 mm. wide) without producing a filling defect. Hence, the pantopaque column must measure 16 mm. or more in width for the negative myelogram to be considered significant.

In the suggestive myelograms a close correlation of the clinical signs and symptoms with the myelographic findings must be made. A failure to fill the axillary pouch is referred to as a "root sleeve defect." As has been pointed out,[3] the normal axillary pouch occasionally may not be filled in spite of painstaking manipulation of the patient. Therefore, obliteration of the axillary pouch occurring as an isolated finding is not conclusive, and is classed as suggestive.

The presence fluoroscopically of a momentary halting in the progress of the pantopaque over a given interspace must be differentiated from a slow trickle of pantopaque to either side of a centrally placed ruptured intervertebral disk or to one side of a laterally placed one. The presence of recurrent temporary pauses in the normal flow of pantopaque suggests the presence of a ruptured intervertebral disk, but again,

this finding must be considered in the light of the clinical picture.

The positive myelograms are divided into two groups, direct posterior herniations and posterolateral herniations. This division was helpful in confirming the presence of bilateral signs and symptoms in the case of direct posterior herniations, as well as in determing the appropriate surgical approach. No further attempt at subclassification was deemed contributory to establishing the diagnosis or to guiding the plan of therapy.

The typical radiographic findings in the presence of a ruptured intervertebral disk are doubtless familiar to the reader; hence they will not be reiterated. The authors would like to stress, however, that the diagnosis of ruptured intervertebral disk should be made both on the fluoroscopic examination and on the radiographic findings, though principally on the evidence seen fluoroscopically. The spot films are employed primarily as a confirmatory measure and serve as a permanent record.

A definite hesitation in the flow of the pantopaque as seen fluoroscopically, followed by a slow trickle, either to one side of a posterolateral protrusion or both sides of a central protrusion is definite evidence of a ruptured intervertebral disk. Frequently cases are seen in which the fluoroscopic findings are definite, yet the radiographic evidence is inconclusive. In such instances, the pantopaque column may appear to be completely divided on the x-ray film, part of it above the suspected interspace, and the remainder below; the sharp concave filling defect requisite for a positive diagnosis is absent. Therefore, it is incumbent upon the fluoroscopist to make every effort to coincide the radiographic exposure with the moment the pantopaque flows over the protruded disk. Only in this way can the outline of the ruptured intervertebral disk be depicted on the x-ray film.

It is important to bear in mind that the size of the filling defect seen on myelography bears no constant relationship to the actual size of the ruptured intervertebral disk. A brief review of the anatomy of the involved structures will make this point apparent. The posterior spinal ligament is closely applied to the posterior surface of the bodies of the vertebrae, both above and below the interspace. Thus, in order to cause nerve root pressure, the ruptured intervertebral disk must, perforce, push the posterior spinal ligament before it, or in rare instances rupture through it. The former circumstance is by far more common and, therefore, what the observer sees on the fluoroscopic examination or on the spot film is not the outline of the ruptured intervertebral disk, but a tentlike deformity of the posterior spinal ligament caused by pressure of the aftercoming disk. (Fig. 1)

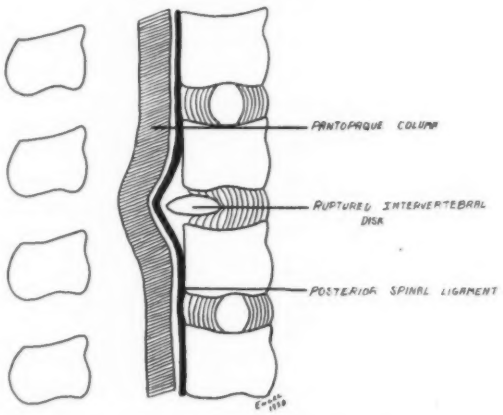

Figure 1: Lateral view of the lumbar spine showing a filling defect in the pantopaque column formed by tenting of the posterior spinal ligament by a ruptured intervertebral disk.

The authors have found no instance in which the herniated material, rupturing through the posterior spinal ligament has been present in sufficient quantity to account for the filling defect seen on myelography. Small amounts of extruded material are occasionally encountered in these cases at operation, but the filling defect is still produced for the most part by the posterior spinal ligament itself.

The complaint of low back pain with sciatic radiation following myelography is a frequent and sometimes distressing sequela to the procedure. Patients who complain of postmyelographic discomfort do so after difficult and often partial removal of the pantopaque from the subarachnoid space.

This complaint does not occur from the presence of pantopaque, per se. In these instances, the authors feel that filaments of the cauda equina have been drawn up against the needle point. When this happens, the patients complain of instantaneous pain in a nerve root distribution. It is this minor injury to the nerve filaments at the time of myelography that accounts for the syndrome of postmyelographic discomfort. Since this pain results from a fault in the technique of withdrawal of the pantopaque, the advisability of removing the substance comes into question. Begg *et al*[2] who use 3 cc. of pantopaque for the examination have stated that no attempt to remove the drug is necessary and that it is absorbed at the rate of 1 cc./year. On the other hand, others use more than 3 cc. of pantopaque and insist on removing it. The authors feel that, in this event, every effort should be made to remove the pantopaque by the Valsalva maneuver, and that no direct aspiration should be used. Only in this way can injury to the cauda equina be avoided.

SUMMARY

Pantopaque myelography was performed in 160 suspected cases of ruptured intervertebral disk. Sixty-six patients had positive myelograms, 21 patients had suggestive myelograms, and 73 patients had negative studies. The positive myelogram was accurate in 94 per cent of the cases that were operated upon. The incidence of false negative myelograms was 7 per cent.

The myelographic diagnosis of ruptured intervertebral disk depends on demonstrating a defect in the pantopaque column fluoroscopically and radiographically. The filling defect represents a tentlike deformity of the posterior spinal ligament caused by the pressure of the aftercoming disk. No constant relationship between the size of the myelographic defect and the amount of tissue removed at operation was noted.

Postmyelographic low backache and radiating pain are the result of injury to the cauda equina in an attempt to remove the pantopaque from the subarachnoid space.

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ACUTE MYELOGENOUS LEUKEMIA

REPORT OF A CASE RECEIVING 214 BLOOD TRANSFUSIONS AND WITH THE DEVELOPMENT OF HEMOSIDEROSIS

PHILIP B. JOHNSON, M. D.

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AND

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NEW ORLEANS

Reports from the literature and our own experience have shown that cases of acute leukemia are short lived in course—usually a matter of several weeks—and that death is due to the results from one of three, or to a combination of these causes: (1) uncontrollable bleeding, (2) infection, (3) general organ failure. The first two of these conditions needs no further discussion—the last may need some explanation. To us, general organ failure is an intangible state manifested by systemic reactions which are variable (fever, azotemia, stupor), and which point to no one organ system as being diseased but rather to a generalized involvement of all organs as manifested by failure to carry out their normal physiologic processes. We believe that this case is worthy of note because of two therapeutic measures which were employed in attempting to control hemorrhage and infection—repeated fresh whole blood transfusions and penicillin. It is also of interest to be able to follow the disease under such circumstances, and to record the results of necropsy findings after a period of fifteen months under such therapy.

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CASE REPORT

A. G. E., a white man, 45 years old, first noted weight loss and easy fatigability in August 1944. In November the patient became aware of a few petechiae on his lower extremities. He consulted a physician who confirmed the presence of petechiae and in addition noted slightly enlarged cervical, epitrochlear, and inguinal lymph nodes. The liver and spleen were not palpable. Examination of the peripheral blood revealed the findings of an acute myelogenous leukemia; the myeloblast was by far the predominating cell. The patient refused a bone marrow survey. For the next six weeks the patient continued his work as physiologist, although he noted increasing fatigability and recurrent crops of petechiae on his chest, abdomen, buccal mucosa, and conjunctivae. There was no history of exposure to carcinogenic agents prior to the onset of symptoms.

Early in January 1945, the patient was hospitalized. He was given an almost continuous infusion of penicillin for seven days—a total of 4,650,000 units with no subjective change in his condition. He was then placed on intramuscular penicillin (15,000 u. to 20,000 u.) every four hours as a prophylaxis against infection. Hematoma of the buttocks developed frequently after penicillin injections in spite of prolonged manual pressure over the sites. This regimen for penicillin therapy was continued until September 1945, when the patient was placed on oral penicillin—50,000 units two to three times daily—and the number of injections was reduced to two a day. The patient was also maintained on large doses of vitamins K, P, and C.

Following his admission in January 1945, the patient got along fairly well. There was no evidence of infection, but crops of petechiae continued to appear. The patient was allowed to return home on the previously described regimen after a few weeks of hospitalization.

On April 2, 1945, the patient noted hematuria, oozing of blood from the gums, and a greater number of petechiae. He returned to the hospital. Examination was essentially the same, and in addition, the liver was felt at the costal region, and the spleen was easily felt on deep inspiration. The patient received two 500 cc. transfusions—each was followed by a mild febrile reaction. After five days, hematuria and gingival oozing ceased. The patient was discharged on his previous regimen, returning to the hospital three times weekly for a transfusion of 500 cc. of freshly drawn blood. Bleeding was controlled for the next three months under this type of management except for an occasionaly oozing from the gums. Only once was blood noted in his stool. This regimen of penicillin, vitamins, and transfusions of whole fresh blood was continued until the patient's death in March 1946. As the disease progressed transfusions had to be increased to five to six times weekly in order to control bleeding. The patient's course was progressively downhill with increasing lymphadenopathy and hepatosplenomegaly. Low grade fever (99°-100°) was present most of the time—at no period other than for febrile reactions to transfusions was the temperature greatly elevated.

There were repeated bouts of bleeding from the gums and recurrent crops of petechiae; these were controlled by fresh whole blood transfusions. On March 9, 1946, the patient went into peripheral vascular collapse and died four hours later. During the last twelve months of his life the patient received 214 transfusions and had 25 phlebotomies.

Because of the large number of blood transfusions that the patient received, blood studies showed a polycythemia periodically. This was usually associated with the subjective complaint of headaches. The patient also felt that the hemorrhagic manifestations were more severe when polycythemia was present. Periodic phlebotomies were performed, therefore, in an attempt to control the polycythemia. As the disease progressed, phlebotomy was necessary at less frequent intervals.

It was our opinion that the platelets present in fresh whole blood—and perhaps some other unknown factor—were the important part of the transfusions which were given to control bleeding. A period, therefore, of never over two hours, and usually less, intervened between drawing of blood and beginning of the transfusion. Blood was allowed to drip slowly, the time in completing a 500 cc. transfusion usually being six to eight hours. The separating of the platelets from the rest of the formed elements of the blood by fractional centrifugation was tried. The danger of introducing infection because of the extra procedures that were necessary and the lack of feasibility of the plan caused us to abandon the idea.

During the course of the patient's therapy, several febrile reactions to transfusions were noted in spite of the fact that type specific blood was given and the matching was done by both test-tube and slide method at 5°C. room temperature, and at 37°C. It was found occasionally that blood which gave no clinical reaction produced agglutination of the patient's cells at 5°C. whereas donor's blood that gave febrile reactions showed no agglutination of the patient's

cells at any of the three temperatures. In addition to the febrile reaction two urticarial manifestations were observed. On one occasion a mild hemolytic episode occurred with subsequent hemoglobinuria and jaundice. This followed the administration of a weak type of "A" blood. The patient was type O, Rh positive. Following a transfusion in January 1946, the patient developed pulmonary infarction associated with hemoptysis and left-sided pleuritic pain. Clotting time of the patient's blood was prolonged, and frequently there was no clot retraction in twenty-four hours. On one occasion the patient suddenly developed severe abdominal pain with evidence of peritoneal irritation. We felt that this was on a hemorrhagic basis, treating the patient with opiates. Symptoms and signs gradually diminished over a three day period. During the last few weeks of life there was abdominal distension, periorbital and pedal edema, and severe dyspnea. This latter symptom we attributed to bilateral pleural effusion and pulmonary infarction. Fowler's solution, colchicine, and deep x-ray therapy were all tried at one time or another during the course of the patient's illness. They all failed to halt the progress of the disease, although Fowler's solution produced some subjective improvement.

PROCTOCOL

The body exhibited mild pedal edema of the lower extremities. There were clusters of petechiae over the dorsum of the feet and over the exterior surface of the lower extremities. Scattered over the skin of the body were several petechiae and ecchymotic areas. The gums were spongy and hemorrhagic. The mucous membranes of the mouth revealed petechiae and ecchymoses.

There was generalized lymphadenopathy of the cervical, axillary, epitrochlear, inguinal, and mesenteric regions—the largest node measuring 2.5 cm. in diameter. There was no significant amount of fluid in the peritoneal cavity. The right pleural cavity contained 1000 cc. of sanguinous fluid, the left 1200 cc. of the same type of fluid. Pleural adhesions were present bilaterally. The pericardial cavity contained 150 cc. of clear yellow fluid. The heart weighed 335 grams. Several petechiae were present on the epicardial surface. No other gross abnormalities of the cardiac musculature were noted. All valves were within normal limits. The right lung weighed 710 grams. There were two well-circumscribed areas of leukemic infiltration—the largest measuring 6 by 5 by 4 cm. The left lung weighed 550 grams. There was a large infarct involving the left lower lobe—and one large area of leukemic infiltration in the same lobe. Bilateral compression atelectasis was present. The spleen weighed 850 grams, was brownish red; its cut surface was granular. The liver weighed 2330 grams; was brownish grey and finely granular on its surface. The pancreas was normal grossly. The stomach contained 1500 cc. of clotted and unclotted blood. There were petechiae and ecchymoses of the mucosa of the stomach. The intestinal tract contained approximately 3000 cc. of blood.

The mucosa of the small and large bowel was full of petechiae, but there was no site from which active bleeding might have taken place. Both adrenal glands were negative on gross and microscopic examination. The right kidney weighed 670 grams; the left kidney weighed 510 grams. The surface was mottled red, and hemorrhagic. There were multiple infarcts of the cortex and medulla—the largest measuring 3.5 by 3 cm. There were greenish yellow nodules scattered throughout both kidneys which appeared to be areas of leukemic infiltration. The bladder contained 300 cc. of pink-tinged fluid. The mucosa revealed numerous petechiae and ecchymoses.

HISTOPATHOLOGICAL STUDY

The lymph nodes revealed a diffuse infiltration by leukemic cells. There were many macrophages with hemosiderin granules, some nodes showing more hemosiderin granules than others.- There was leukemic infiltration in the interstitial spaces of the myocardium and around the blood vessels in the epicardium. There was a localized large mass of leukemic cells attached to the epicardium. The splenic capsule was greatly thickened. There was obliteration of the Malpighian corpuscles. Numerous macro-

phages that contained hemosiderin pigment granules were present—these being mostly around and in trabeculae. The pulmonary alveolar septae revealed leukemic infiltration. The pulmonary vessels showed thrombosis and the vessel wall was infiltrated by leukemic cells. The liver showed leukemic infiltration, predominantly in the periportal spaces. The liver sinusoids contained a variable number of leukemic cells. A large amount of hemosiderin pigment was present in the Kupffer and polygonal cells. There was diffuse leukemic infiltration through the interstitial tissue of the kidneys obliterating tubules and glomeruli in some sections. There was complete replacement of marrow by leukemic cells; no fat cells or megakaryocytes were present.

DISCUSSION

The course of patients with acute leukemia has occasionally been variable, but death from the disease has always been inevitable[3, 6]. Warren[9], from a study of 113 cases of acute leukemia, noted the maximum time of survival of twenty-six weeks with an average of two months. The prognosis; was worse in the Negro[8]; approximately 50 per cent of all cases of acute leukemia in the Negro studied at Charity Hospital died within thirty days. There have been a few cases with temporary remission—one reported by Birge[2] *et al* had a spontaneous remission of twenty-one months.

With the use of the folic acid antagonists more recently[4, 5], the immediate outlook on acute leukemia was somewhat encouraging, although ultimate prognosis was not changed. Farber[5], using folic acid antagonists on 69 children with acute leukemia treated for three weeks or longer, observed somewhat more than 50 per cent improvement in clinical findings in the whole group; one child lived twenty-three months and another lived sixteen months. Bessis[1] reports therapy for leukemia with replacement transfusions. In his series of 30 cases the general condition of all cases was improved; there was a disappearance of adenopathy, hepatosplenomegaly, fever, pain and bleeding. In 6 of these cases there was complete clinical, peripheral blood and marrow remission. The remission lasted, in general, from three weeks to three and a half months; however, 2 patients with complete remission were still alive after eleven months, 1 in complete remission, the other in clinical remission. Following relapse, the effect of replacement transfusion was less marked.

SUMMARY

A case of acute myelogenous leukemia treated with penicillin and repeated fresh whole blood transfusions is presented. The

TABLE 1

1945	Hgb. (Sahli) grams	RBC in Millions	WBC in Thousands	Plat. in Thousands	Hematocrit %	Sed. Rate (Wintrobe)
January 29	13.3	3.7	21,000	130,000	38	32
February 28	14.2	4.5	19,000	100,000	44	34
May 7	12.1	4.2	31,000	30,000	....	....
May 16	14.2	4.8	39,000	80,000	40	10
May 23	18.9	6.3	29,500	145,000	53	8
June 19	19.4	....	22,400	40,000	57	11
November 19	19.1	....	93,000	45,000	52	....

TABLE 2

1945	Neutrophil	Eosinophil	Lymphocyte	Myelocyte	Metamyelocyte	Promyelocyte	Myeloblast
Jan. 29	2.5	4.0	13.5	4.0	0.5	0.5	66.5
Feb. 28	0.2	1.5	29.2	0.0	0.0	2.0	56.5
May 7	21.0	4.0	19.0	1.0	1.0	11.0	42.0
May 23	16.0	6.5	22.0	0.0	0.0	6.5	49.0
June 19	13.5	11.0	10.5	0.0	1.5	1.0	58
Nov. 19	5.0	0.0	10.0	0.0	0.0	4.6	70.3

natural evolution of the disease was, we believe, retarded because of these two therapeutic measures. Except for the duration of the disease in this case, and the fact that clinically the findings, after several weeks, were compatible with a chronic leukemia, the outcome was the same. Another feature of this case is the large number of transfusions in such a short time as compared with Osgood's case[7] receiving 43 transfusions in 52 days. The cause of death was the result of uncontrollable bleeding—one of the three causes of death in the usual case of acute leukemia.

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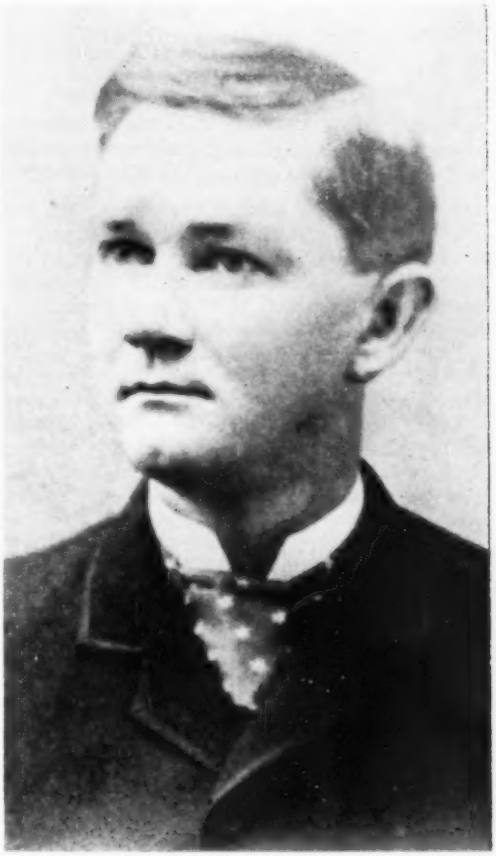

DR. ALBERT BALDWIN MILES

DR. ALBERT BALDWIN MILES

DORMAN WINFREY
HENDERSON, TEXAS

Dr. Albert Baldwin Miles was born in Prattville, Alabama, May 18, 1852. When he was five years old, his family moved to El Dorado, Arkansas, where his father engaged in farming. In 1861, the family moved to Rusk County, Texas, trying to find a climate to suit the father's health. The family, which included five boys and one girl, lived there until the death of the parents in 1864. An uncle, John B. Tatum, took charge of young Miles and moved back to El Dorado. At the age of sixteen, he entered the University of Virginia, which he attended for two years.

From boyhood Miles' ambition had been to follow medicine, his uncle's profession. In the autumn of 1872, he went to New Orleans and took the first step on the road that led him to fame, entering the Medical Department of the University of Louisiana, now Tulane University. At the close of the session he was appointed as one of the resident students of the Charity Hospital, where he served the maximum term of two years. He graduated in medicine on March 16, 1875, the valedictorian of his class. He remained in New Orleans, where two months later he was made Demonstrator of Anatomy.

He served in this capacity for ten years, during which time he made the remarkable record of never failing to meet his classes.[1] During those ten years Dr. Miles also held many other prominent positions, including

Acting Physician in charge of Hotel Dieu. Following this, he held a number of positions at Charity Hospital.

One of Dr. Miles' students at Tulane, Dr. J. E. Watkins, Henderson, Texas, resident, gives the following characterization of Dr. Miles as a teacher an man:

"As a teacher his manner was simple. He was beloved by all his students. He was always kind to and considerate of the younger members of the profession, and helped many of the more needy ones financially as well as with good advice. He was always cool and collected during emergencies, and the more difficult the case the better he did operate. His judgment was remarkable and his opinion was always highly valued. He always thought twice before he made a statement, and he was never called upon to retract a rash statement. He knew his strength and its limitations. Dr. Miles' good sense and clear judgment were always prominent in everything he undertook."[2]

On June 22, 1892, Dr. Miles was elected House Surgeon of Charity Hospital. Although he had started almost as a stranger, by his perseverance, intelligence, and devotion to duty he had earned his way to the highest and most coveted position in the medical profession of the state of Louisiana. After Dr. Miles accepted this position, his fame grew; and people from all parts of the United States, and Europe as well, came to be under his care.

"He gave to the poorest as well as the richest the best that medicine offered at that time. He never made an incision without a clear idea of what he was doing and what he expected to accomplish. He never performed an unnecessary operation, and he could usually predict the outcome before it was performed. Whenever performing an operation, Dr. Miles always weighed every factor in advance, and regardless of the situation he felt that the best that could be done was being done. This soundness of judgment came to be known speedily among the patients; and to them Dr. Miles was always as a medical court of final appeal."[1]

Dr. Miles made many contributions to the medical world and to Tulane University in particular. He was very successful in caring for gunshot wounds and wrote a number of papers on that subject.* His interest in affairs touching the profession was always active. He played a prominent part in the medical organization, being a member of the old New Orleans Medical and Surgical Association, the Parish Medical Society, the Louisiana Medical Society, the American Medical Association, and numerous others. While he was president of the Louisiana Medical Society, the Louisiana State Legislature passed the Medical Practice Bill, which gave doctors the right to practice medicine. His executive ability was notable, and during his regime at Charity Hospital, many improvements were instituted. He planned the ambulance system, worked out plans for the building of out-door clinic buildings, and made plans for the building of an amphitheatre, but he did not live to see the latter completed. The Miles Amphitheatre bears his name today. He was largely responsible for the founding of the Charity Hospital Training School for Nurses and was the first dean of its faculty.

On the evening of July 16, 1894, a close friend, Dr. E. F. McGehee, entered Dr. Miles' office. From a cordial handshake Dr. McGehee discovered that Dr. Miles had fever. Although Dr. McGehee insisted that he go to bed, Dr. Miles had a number of surgical operations to perform and went ahead to his duty. After his first operation his fever reached 103 degrees, and he was compelled to retire to his room. Scarcely had the information of his illness been given out before the most skilled practitioners and nurses of New Orleans had come to offer their services. He had typhoid. Up to the very last there was hope for Dr. Miles, because he possessed such a magnificent constitution, but gradually he weakened.

"It was an overwhelmingly sad duty, but Dr. McGehee, yesterday morning realizing that the end was about at hand, determined to apprise the man, whom he loved as a brother, that the time was rapidly approaching when his earthly career, so noble, so brilliant, must close. It required an almost superhuman effort, still, fortified by that consciousness that his friend must not pass away unawares, Dr. McGehee, battling against his weaker emotions, reached over the bedside and whispered: "Miles you are very low." The pa-

*"One of his many successful operations for gunshot wounds was the removal of a one-ounce minié ball from the hip of an ex-Confederate veteran, who had been wounded at Gettysburg. He had been crippled for twenty-two years, repeated operations by other surgeons having failed." Dr. J. E. Watkins, interview, Henderson, Texas, January 21, 1943.

tient gazed at his devoted companion, remarking only: "Well!"[3]

Dr. Miles died at 11:30 A. M. on August 5, 1894. He had been a member of no particular religious sect and had never married. "When the sad news of his death was finally given to the world it was felt that a calamity had overtaken us." The South had lost one of its most public-spirited and charitable citizens. Dr. Miles was indeed New Orleans' most universally loved citizen.

The next day the funeral was held and the New Orleans *Daily Picayune* carried a front page account beneath the headlines:

DR. ALBERT B. MILES PASSES FROM THIS EARTH AND THE SOUTH MOURNS THE SUDDEN CLOSING OF THE CAREER OF ONE OF ITS MOST BRILLIANT SURGEONS, THE NOBLE LIFE AND THE TOUCHING TAKING AWAY OF THE BELOVED HEAD OF THE CHARITY HOSPITAL STAFF AND EXEMPLARY CITIZEN!

The account of the funeral follows:

"The funeral yesterday afternoon was a worthy tribute to his memory. Like the crowds who visited the death chamber where he lay in state, it was composed of all class men, those who could afford it following the remains to the grave in carriages, and those who could not taking the more cosmopolitan means of transportation, the street cars.

"From early morn to the hour set for the services, there was one continuous stream of people going in one door and out the other, and it was all Corporal Gabe Porteus who was in charge of the police detail, could do to prevent confusion amidst the vast throng. . . .

"The body was exposed in a mortuary chamber, erected in a meeting room of the board of administrators of the hospital. The coffin, of plain and unpretentious shape, covered with black cloth was strewn with flowers, many of the offerings of handsome design. Banked about the room were other floral pieces, while the masses of cut blossoms were assembled about the pedestals of the bier. . . . From the ceiling hung draperies of black and white, and the windows were decorated with the same somber hues. . . .

"At 11 o'clock fully 2000 people had assembled in the open paved court in front of the hospital, while hundreds of the patients, anxious to participate as far as possible, crowded the windows above. The day was warm, and the heat though intense, did not seem to have much effect on the crowd. The facade of the hospital presented a peculiar appearance, the lugubrious gray of the customary hue receiving an accentuation of gloom from the somber trappings which were festooned above the porch. The heavy columns which support the pediment were all wound for a distance of two-thirds up their height with black while wound festoons of black and white extended from pillar to pillar lining them into a huge stone, silent fellowship of melancholy and regret. . . . Almost every prominent man in the city who was able, by his presence, paid his last tribute to the memory of the famous doctor. (There follows a lengthly list of some of those present which included many famous doctors, officials, and the Governor of Louisiana).

"The religious exercises were held on the porch of the hospital in the open air. The grass plots were filled in front by a hushed and attentive crowd. The day, though perfectly calm and clear, was filled with tropical sunshine. The rays beat down with sultry warmth on the flagstones. . . . In the porch itself, crowded to suffocation with the distinguished mourners, the heat was intense. The coffin, over which masses of flowers were strewn, was placed immediately before the open doors of the hospital. A faint breeze from time to time issued from the corridors of the building, and mingled the scents of the blossoms with the faint odor of the drugs.

"Dr. Palmer delivered the memorial sermon, having read the service appropriated by the Presbyterian ritual to the burial of one suddenly dead. . . . Dr. Palmer referred to Miles as a scholar and student, wedded to his profession, with much the sameness of love as a bridegroom to his bride. He had risen to the height of his profession and he was the tallest of his peers. . . . He was likened to a column, setting forth to coming generations the simple majority of his gentlehood. He was like Gibraltar against whose rugged front the ocean warred in vain. . . . (Here Dr. Palmer told of his first meeting with Dr. Miles and of the last before he died).

"After Dr. Palmer had concluded his eloquent eulogy, the coffin was tenderly lifted by the pallbearers and slowly carried from the porch to the hearse in waiting, and then the cortege was formed and moved towards the Metairie cemetery. Arriving there, a large concourse had already congregated around the tomb of Mr. John M. Parker, and in silence they made their way for the casket, which was placed upon the upper half of the tomb, a portion protruding. Then Dr. Palmer ascended the green mound, and all with uncovered heads listened to the eloquent prayer uttered in the behalf of the friend whose remains were now to be forever withheld from mortal gaze.

"Dr. Palmer's prayer was brief but touching in the extreme, and brought tears to many eyes during its deliverance. At its conclusion the door of the tomb was slowly closed over the body and the key turned, and so came the end of a glorious career cut short in its zenith. . . ."[4]

Dr. Miles' will was probated soon after his death, and its contents surprised a great many people. In it he asked that his per-

sonal belongings be distributed among certain friends, that certain sums of his money be given to designated friends, and that his friend Tom, the janitor, "be provided for the rest of his days." He left Tulane University ten thousand dollars in cash, a sum which at that time would go a long way in the advancement of medical research. His most surprising request, however, was that his body be brought back to Lawsonville in Rusk County, Texas, to rest beside his father, mother, and sister in the little family burial plot under the cedars on the hilltop. Today Dr. Miles' body lies buried in the Miles plot of the Lawsonville cemetery. The following inscription appears on the headstone:

SACRED TO THE MEMORY OF
ALBERT B. MILES, M. D.
SON OF BENJAMIN FRANKLIN AND
SARAH ALBERTINE MILES
BORN AT PRATTVILLE, ALABAMA
MAY 18, A. D. 1852
DIED AUGUST 5, 1894

The Miles' plot is inclosed within an iron fence five feet high and probably fifteen by thirty-five feet. All the Miles family graves have large monuments which, although weeds are all around, look like new. Outside the inclosed plot it is necessary to make one's way through more weeds and undergrowth to get out of the cemetery which is rarely ever used for burial now. There is no road leading to the cemetery from the main highway.

Thus it is that although one of the South's greatest surgeons, a man that would rank with the Mayos today, was reared in Texas and lies buried in Rusk County, hardly a person in the vicinity could lead you to his grave or tell you anything of him other than "he was a doctor."

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NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

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News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Ave., New Orleans, La.

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CONGRESSIONAL LEGISLATION TO SUBSIDIZE NURSING EDUCATION AND ULTIMATELY CONTROL NURSES

As the whole nation now knows, the medical profession has been actively fighting State Medicine. The plans to take over the whole field of medicine in one comprehensive bill failed in the last and in several preceding Congresses. The likelihood of any such move succeeding in the present Congress is even less. The advocates of State Medicine, when they were defeated in what could be called the frontal attack, stated that they would persist in their efforts, and, if possible, procure legislation to establish their entire program by having it enacted bit by bit. Presumably, following such tactics, the outposts would be taken by stealth and the citadel would eventually fall by attrition. One such bill was that designed to subsidize, and eventually, control medical schools. However, at the start, it was stated that no effort would be made to control such schools. Such a declaration would have no value and no binding effect on future Congresses. It is fundamental in our bureaucratic law at the present time that the federal government can control that which it subsidizes.

Another such bill, in which one segment of the State medicine scheme is being advocated, is H. R. 910, introduced on January 4 by Representative Frances P. Bolton. The bill is designed to give financial assistance to nursing schools; to provide scholarships to qualified students, seeking career nursing; to provide for research in nursing; and to provide for recruitment of nurses. No stated amount is appropriated to meet these ends. The specific amount of $5,000,000 is authorized for the fiscal year ending June 30, 1952, and for each succeeding fiscal year, for the construction and equipment of new schools of nursing and the expansion of existing facilities. The effect of the bill would probably be to increase the number of prospective students in the field of postgraduate nursing.

If enacted into law, this bill would add greatly to the expanding power of the Federal Security Administrator, Oscar R. Ewing, as it would be administered by him. There is a provision for a national council of nursing education. The function of the council is to give advice and recommendations, but the council has no final authority. This would rest, as in most such bills, with Mr. Ewing. Following the provisions of this sort, it is quite easy to see that the Administrator could, by favoring one type of school and restricting another, very easily acquire complete domination over the whole field of nursing education. A private nursing school in a private hospital could hardly compete with the largesse flowing from the

taxpayers' pockets through the schools subsidized by the federal government.

The medical profession would do well to study the bill and to oppose it. It seems probable that the greatest opposition to the bill would have to come from the medical profession. The position of the registered nurses on this bill appears to be one of acceptance. It is reported by Marjorie Shearon that Ewing's viewpoint was presented to the American Nurses Association at a meeting of January 21 and 22, by Pearl McIver and Lucile Petry of the U. S. Public Health Service. As a result, some 75 of the 150 nurses attending the meeting descended on Washington on January 24 to lobby for the bill. In addition, it is learned that the National League of Nursing Education has chosen as a general counsel Lillian Poses, whose background is such as to favor State Medicine, and apparently, favor Communism. For some years she was attorney in the New York Regional Office of the Social Security Administration. She has also been a lecturer among those who favor Communism. She has also been active with a group in New York with Communist leanings, among whom are Ernst P. Boas, M. D., head of the Physicians Forum lobby and a member of the Board of Directors of the Committee for the Nation's Health, both organizations being actively critical of the A. M. A. and advocating Communistic medicine as their main theme.

It is by no means certain that the majority of registered nurses are in favor of State Medicine, or in favor of this bill. But circumstances have been such that opposition to bills of this type have not been forthcoming from their national organizations. The effect of bills such as this would be ultimately to bring a marked change in the practice of nursing as a profession, and in the processes of nursing education. It would mean the establishment of a hierarchy within the field, rapid advancement to those who had degrees in nursing, and the employment of many in administrative matters having nothing to do with the sick. It would also mean that the nurse as an individual would become subordinate to a bureaucracy and to the whims of politics. In other words, the nurses should have the same reasons for opposing this Communistic scheme as do the doctors. Whatever immediate gains there might be, such benefits as would be secured under provisions for Social Security would be neutralized by loss of independence and freedom of the nursing profession to practice and regulate itself. Every hospital administrator and every director of a nurses training school should join the others in the field of medicine who oppose this bill.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

OFFICERS OF COMPONENT SOCIETIES LOUISIANA STATE MEDICAL SOCIETY

This is roster of component society officers as recorded in the office of the Secretary-Treasurer of the State Society. Kindly advise promptly in regard to change of officers by election, resignation, etc.

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LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

CAMP FOR DIABETIC CHILDREN

A large group of Texas' leading citizens are working together to help diabetic children of the entire South and Southwest, through the Southwest's only camp for diabetic children, located near Gainesville, Texas. This camp is run by a nonprofit, charitable Foundation.

Its purpose is to teach diabetic children that they do not really have a handicap, but can live normal, useful lives by following certain rules of living.

The camp is going into its second year and has filled a vital need in publicizing and demonstrating the regime for the diabetic child. Further information may be had by writing the Chairman, Robert W. Brown, c/o The Sweeney Diabetic Foundation, Gainesville, Texas.

SOUTHERN SOCIETY OF ANESTHESIOLOGISTS MEETS IN APRIL

The Southern Society of Anesthesiologists will hold its annual meeting at the Brown Hotel, Louisville, Ky., on April 20, 21. The President of the Society is Dr. Harvey Slocum of Galveston, Texas, and the secretary is Dr. John Adriani, Charity Hospital, New Orleans.

The science of anesthesiology has been advanced notably by many members of this society. Its proceedings will be of much interest to the members and to physicians who wish to attend.

MEETING AMERICAN SOCIETY FOR THE STUDY OF STERILITY

The American Society for the Study of Sterility is having its annual meeting in the Ritz Carlton Hotel, Atlantic City, June 9, 10, 1951. Five papers of basic interest are scheduled. Registration fee is $10.00. Because of the time of the year, those wishing to attend should arrange for accommodations well in advance.

POSTGRADUATE COURSE IN ALLERGY AND IMMUNE MECHANISMS

A course in diseases due to allergic and immune Mechanisms, under sponsorship of The American

College of Physicians, will be given by the University of Pittsburgh School of Medicine. Meeting place will be the Hotel Roosevelt, Pittsburgh, Pa. The course will extend over five days, April 24-28, 1951. Thirty-seven papers on the fundamental and also the practical aspects of allergy are being presented. The course will open on Tuesday, April 24, and continue through Saturday, April 28. Each day will end with a round table discussion, open to faculty and students alike.

SECOND INTERNATIONAL POLIOMYELITIS CONFERENCE

The Second International Poliomyelitis Conference has been scheduled for September 3-7, 1951, at the Medicinsk-Anatomisk Institut of the University of Copenhagen, in Copenhagen, Denmark, officials of the International Poliomyelitis Congress have announced.

Sponsors of the meeting are the National Foundation for Infantile Paralysis of the United States and the Danish National Association for Infantile Paralysis. Presiding President of the Conference is Professor Niels Bohr of Copenhagen.

The tentative program of the five day meeting includes 32 papers and discussions on the general headings: "Virus and Its Interaction with the Host Cell;" "Pathology and Pathophysiology of Poliomyelitis;" "The Coxsackie Group of the Viruses;" "Differential Diagnosis in Acute Poliomyelitis;" "Treatment of Poliomyelitis;" "Immunity and Resistance in Poliomyelitis and Other Virus Infections;" and "Ecology of Poliomyelitis."

The program also includes scientific and technical exhibits and clinical demonstrations of methods of treatment in the acute stage as well as the after effects.

POSTGRADUATE COURSE IN DISEASES OF THE CHEST

The Fourth Annual Postgraduate Course in Diseases of the Chest sponsored by the American College of Chest Physicians, Pennsylvania Chapter and the Laennec Society of Philadelphia, will be presented at the Hotel Warwick, Philadelphia, Pennsylvania, March 26-30, 1951.

This course will emphasize the recent developments in all aspects of the diagnosis and treatment of chest disease. The course is open to all physicians; however, the number of registrants will be limited. The tuition fee is $50.00 and applications will be accepted in the order in which they are received. Applications should be sent to the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

VACCINATION REQUIREMENTS FOR TRAVELERS PUBLISHED BY WORLD HEALTH ORGANIZATION

The World Health Organization has compiled and published a list of vaccinations required by 122 countries and territories from travelers coming from abroad. The list indicates the situation as on 31 December 1950.

Copies of this list will be made available, on request, to national health administrations, port and airport health authorities, steamship navigation companies and airlines, and their agents.

The World Health Organization states that there is no provision in the International Sanitary Conventions making it compulsory for travelers to be vaccinated or inoculated against the diseases dealt with. However, for some years past it has been customary for sanitary administrations to request travelers coming from infected, suspected, or even health areas to present on arrival in the country certificates of inoculation or vaccination against one or more of these diseases: cholera, yellow fever, typhus, and smallpox.

CANCER SEMINARS THIS MONTH

The Cancer Committee of the State Society, in connection with the Cancer Society of the State of Louisiana, are arranging to have seminars at various points in the state during March. The seminars are part of a very estimable campaign to present the latest on cancer and to make it available where most of the cancer cases originate, namely, with the general practitioner.

On March 14, 15, and 16, the team from Louisiana State University will be in Shreveport, Monroe, and Alexandria, in that order. The Tulane team will cover Baton Rouge, Lafayette, and Lake Charles on the same dates.

It is planned that the sessions will open at 2:00 P. M. with the presentation of typical tumor cases during the afternoon, and the session will be concluded by a clinicopathological conference. Following this, there will be time for dinner, and the seminar will convene again at 7:30 P. M., at which time there will be formal presentations of papers on the didactic phases of cancer. It is planned that the meeting will be completed by 9:30 P. M.

These meetings have been stimulating and instructive. It is hoped that those in the vicinity of the cities selected will have the opportunity to attend and participate in the discussions.

WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

The 1950-51 mid-year Board meeting of the Woman's Auxiliary to the Louisiana State Medical Society was held at the Bayou DeSaird Country Club in Monroe, with Mrs. DeWitt T. Milam, President, presiding. Twenty-three members were present, representing all sections of the state.

Routine business was transacted and the various projects and programs of the State Auxiliary

were discussed. Reports were given by all officers, councilors, and committee chairmen who were present.

Mrs. Milam announced that Gov. Earl K. Long had signed the proclamation declaring March 30 as Doctor's day, and that he had also endorsed the resolution opposing compulsory health insurance.

The promotion of the magazine *Today's Health* published by the American Medical Association for the general public was discussed. The large number of subscriptions this year showed an increased interest in this medium of disseminating health information to the public. The reports of work done by the Parish Auxiliaries throughout the state in Red Cross, Cancer Drives, and Civil Defense plans, were most outstanding.

Members of the Board living in Monroe entertained the out-of-town guests at a breakfast at the home of Dr. and Mrs. C. U. Johnson on Forsythe Ave. At the close of the morning session there was a luncheon at the Country Club.

Mrs. Milam invited all the members of the Board to an Open House at her home on Island Drive following the afternoon session. In spite of the ice, snow and freezing weather all accepted her invitation. The open house was followed by a buffet supper given by Dr. and Mrs. Milam.

The following members were present: Mrs. Edwin R. Guidry, Mrs. John S. Dunn, Mrs. George Feldner, Mrs. Jules Myron Davidson, Mrs. Edwin A. Socola, Mrs. Theodore Simon and Mrs. Grenes Cole from New Orleans; Mrs. Roy Carl Young, Covington; Mrs. Rhodes Spedale, Plaquemine; Mrs. M. C. Wiginton, Hammond; Mrs. E. B. Flake, Shreveport; Mrs. Arthur D. Long, Baton Rouge; Mrs. D. B. Barber, Alexandria; Mrs. A. Scott Hamilton, Mrs. A. D. Tisdale, Mrs. C. B. Flinn, Mrs. Cyril T. Yancey, Mrs. A. G. McHenry, Mrs. J. E. Walsworth, Mrs. C. U. Johnson, Mrs. Ralph Talbot, Mrs. C. P. Gray, Jr. and Mrs. DeWitt T. Milam from Monroe.

LAFAYETTE PARISH

The meeting of the Lafayette Parish Auxiliary was held on January 10, 1951, in the home of Mrs. L. A. Prejean at Scott, La., with Mrs. Ralph Bourgeois assisting as co-hostess. Mrs. Edward Wynne, president, presided.

Miss Julia Taylor, regional director of Public Welfare, addressed the meeting on community education and services in public health.

Assisting the hostesses in serving refreshments were Mrs. L. B. Long, Mrs. C. E. Hamilton, and Mrs. Boring Montgomery. Members present besides the hostesses were Mrs. Edward Wynne, Mrs. Henry Voorhies, Mrs. Lee Sonnier, Mrs. C. K. Olivier, Mrs. I. Latiolais, Mrs. I. A. Kimbrough, Mrs. Edward M. Harrell, and Mrs. J. E. Duhon.

ORLEANS PARISH

The regular monthly meeting and tea of the Woman's Auxiliary to the Orleans Parish Medical Society was held February 14, at the Orleans Club.

The 1951 certificates of honorary membership to the "Two Women of the Year" were awarded to Mrs. Herman B. Gessner and Mrs. William Kohlmann. Presentation was made by the President, Mrs. John T Sanders.

Mrs. Kohlman, widow of the late Dr. Wm. Kohlman, nationally known obstetrician and gynecologist, is a charter member of both the Orleans Parish and State auxiliaries She has, in the past, served as vice-president, historian, and corresponding secretary of the Orleans Parish auxiliary. She has also been State Chairman of the Commemoration fund.

The honorary membership marks the recognition not only of Mrs. Kohlman's services to the Auxiliary, but of her many important community activities. She served as volunteer nurse in the Red Cross blood bank for three years from its inception. She also worked in the Charity Hospital blood bank and the Red Cross Bandage Center. In 1950 she was first vice-president of the Home for Incurables, and at present is second vice-president of the Sarah Mayo Hospital, as well as chairman of the Medical Committee of the Milne Home. She has been a moving force in the Community Chest as well as in many other civic activities.

Mrs. Gessner, widow of the late Dr. Herman Gessner, a prominent New Orleans surgeon and teacher at Tulane University for fifty years, is also a charter member of the Orleans Parish and State auxiliaries. She has served as President of the State auxiliary and Chairman of its Memorial Committee. In the local auxiliary she has held the offices of vice-president and historian.

Mrs. Gessner is being honored for many outstanding civic and community activities. These include such service as Board Member of the Home for the Incurables, Chairman of its medical committee for twenty years, and treasurer for sixteen years. She established a clinic with a dental chair in the Home and instituted the practice of senior medical students active as externes. For a number of years she served on the board of the E. R. A. club and was its corresponding secretary. Other activities include Presidency of the Milne Home for dependent girls for three years, board member and corresponding secretary of the Orleans Club, and first president and charter member of the Fine Arts club of which she is now honorary member.

Mrs. Joseph D'Antoni, Convention Chairman, reported that the committee appointed for the Graduate Medical Assembly is as follows: Mrs. Daniel Murphy, Ladies' Registration at the Roosevelt Hotel; Mrs. Charles B. Odom, Information and Class Reunion Booth at the Municipal Auditorium; Mrs. George Feldner, Transportation; Mrs. Eugene

Countiss, Entertainment, and Mrs. William A. Sodeman, Publicity.

Mrs. Edwin Guidry, Chairman of the Essay Contest, reported that the contest is well under way throughout the city and state.

The Doctors Day Chairman, Mrs. Charles Robinson, stated that she is sending an informal note to all Orleans Parish doctors in the service.

Mrs. William A. Sodeman.
Publicity Chairman.

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A SALUTE TO DOCTORS

"Family Doctor"

By Dorothy Bladin Hill

Out of a world of black ignorance and jagged fear
Standing sturdy like a beacon of guiding light,
Dispelling the horror of a pain-filled night,
You come to us, with your brusque, good cheer.
How quick your hands to probe, your eyes to peer;
What God-given strength lies in your quiet might,
What sinewy muscles you use to win your fight.
It's over . . . and instantly your face is clear
As you smile over a task well done.
Quietly you repack your medical kit
And stop a moment long enough to say,
"How bright the room is with the morning sun."
And then you go again, doing your needed bit
To help the world face yet another day.

From the American Album of Poetry

The poem above is indicative of the feelings of the whole of mankind for its doctors. Only a profession of men who have gone forth ministering to the sick could have evoked such a tribute. In our world of strikes for higher pay, cruel accusations among politicians, and a relentless desire for the limelight by a vast majority of the population, our doctors have gone quietly onward and upward to greater strides in relieving and preventing suffering, both physical and spiritual. In celebration of Doctor's Day, March 30, we of the Woman's Auxiliary to the Orleans Parish Medical Society want to say that, unsung as our doctors might be, in the hearts of all there lies the most enviable of rewards—the highest admiration afforded any human being. To be loved by man one must love man. For having been placed before all else by the doctor's tireless service, the world and its inhabitants place the medical profession before all other professions on a pedestal of humble gratitude. Doctors, we salute you!

Mrs. Charles R. Robinson,
Woman's Auxiliary to the Orleans
Parish Medical Society

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BOOK REVIEWS

Le Système Neurovasculaire. Étude anatomique, physiologique, pathologique et chirurgicale: By Guy Lazorthes. Paris, Masson, 1949. pp. 300.

The present volume presents a detailed summary of current information concerning the nervous control of the blood vessels. Following a statement of general principles, the author systematically reviews the anatomy of the various nerves to blood vessels throughout the body. He then discusses the physiology of the control of the blood vessels, describes the various syndromes resulting from disturbances of the neurovascular system and finally presents his ideas concerning the surgery of this system. On the whole the volume is well documented and exhaustive. One is somewhat disappointed by the inadequate review of cortical representation of blood vessel control, as well as by the author's unequivocal acceptance of Head's theory of epicritic and protopathic sensation. His conclusions concerning the sensitivity of the meninges are at variance with the work of Wolff. Such minor matters aside, the work is interesting and instructive and should be of value to people working in the field of vascular disease.

D. D. Freedman, M. D.

Principles and Practice of Plastic Surgery: By Arthur Joseph Barsky, M. D., D. D. S. Baltimore, The Williams and Wilkins Company, 1950, pp. 484. Price $10.50.

A splendidly written book in which the subject matter is excellently arranged, and masterfully presented.

After the author discusses the general considerations he presents the subsequent subject by explaining the fundamental principles underlying each one. This is followed by a thorough discussion of the problems involved. Each chapter is enriched by a profusion of well chosen illustrations. The few illustrations in color, shown at the outset, enhance the value of this book. The final chapter on prostheses forms an important and valuable part of this volume.

Each chapter is followed by an excellent bibliography giving an abundance of desirable and valuable references on the subjects discussed. This book is not only of interest and great value to the specialist in plastic surgery, but should also be of great interest and importance to the general surgeon whose problems all too frequently require a knowledge of many of the fundamental principles and procedures in plastic surgery.

Frank L. Loria, M. D.

A Text-Book of X-Ray Diagnosis, by British Authors; in Four Volumes; Second Edition; Edited

by S. Cochrane Shanks, M. D., F. R. C. P., F. F. R. and Peter Kerley, M. D., F. R. C. P., F. F. R. D. M. R. E.; Philadelphia, W. B. Sauders Co., 1950. V. 3, Pp. 830, 694 Illus., Price $18.00.

Volume III is the second edition of this well-known work by the British Authors. While the outline of the previous edition has been adhered to generally, many changes have been made in the present series.

Volume III is divided into six parts, as follows: Part 1, the alimentary tract; Part 2, the biliary tract; Part 3, the abdomen; Part 4, obstetrics; Part 5, gynecology; Part 6, the urinary tract.

Part 1 is devoted to discussions of the roentgenology of the salivary glands, pharynx and esophagus, stomach, duodenum and diaphragm, small and large intestines and appendix, and the alimentary tract in infants and children. The last section on the alimentary tract in infants and children is of special interest and should impress the pediatrician as well as the general practitioner and radiologist.

Part 2 covers the biliary tract. The anatomy and physiology are adequately considered. Many technics for cholecystography are discussed and evaluated. The pathological biliary tract is discussed in the remaining chapter of this part.

Part 3 consists of one chapter devoted to the liver, spleen, adrenals, and pancreas.

Part 4 is divided into four sections. Section 1 is concerned with the antenatal study of the fetus. Section 2 of eight chapters, discusses the obstetric pelvis and relationships. Section 3 considers the radiology of the soft tissues and placenta, and section 4 considers the urinary tract in pregnancy.

Part 5 is devoted to gynecological radiology. Hysterosalpingography and the influence of the uterus and pelvic tumors on the urinary tract are adequately covered.

Part 6 contains a rather comprehensive discussion of the urinary tract. All of the usual and many of the infrequent diseases of the tract are covered.

As in the first edition and in Volume IV of the Second Edition, the text is clear and comprehensive and the illustrations are excellent. For practical purposes no significant loss of detail from the original roentgenograms has occurred. The index and bibliography are adequate. The four volumes of the work should be available to all radiologists and to all physicians and students interested in radiology.

J. N. Ané, M. D.

Cancer of the Colon and Rectum, Second Edition: By Fred W. Rankin and A. Stephens Graham, Charles C. Thomas, Publisher, Springfield, Illinois, 1950. Pp. 427. Price, $7.50.

In this second edition of their monograph on cancer of the colon and rectum, the authors present in the same authoritative and masterly fashion which characterized the first edition, the basic anatomical, physiological, pathological, and operative surgical aspects of the subject. In this new edition, the benefits of improved preparatory measures, including the use of chemo-therapeutic agents, antibiotics, whole blood transfusions, and the administration of high caloric diet, as well as close attention to protein and electrolyte balance, are thoroughly discussed.

The advantages of cooperative assistance of internists and cardiologists, particularly in the preparatory period, are presented as having immeasurably advanced surgery in this field, so that in expert hands mortality has been reduced to well below 5 per cent.

The authors feel that with present methods of management, one-stage procedures can be utilized in a very high percentage of cases. It is their belief that practically all cancers of the right and transverse colon can be removed in one stage with immediate restoration of gastrointestinal continuity either by open or aseptic anastomosis.

They believe that in the left colon, obstructive resection is the operation of choice in most cases, although resection followed by immediate anastomosis may be performed in 25 to 30 per cent of cases. If the latter procedure is carried out, it is essential that adequate blood supply to cut ends of the bowel be visibly evident, and that adequate decompression has been accomplished prior to resection.

The authors express little enthusiasm for operations in which an attempt is made to preserve the rectal sphincter in rectal and rectalsigmoidal cancers. It is their feeling that no cancer of the rectum which is below the peritoneal reflexion should be submitted to a sphincter-saving operation, but that in such circumstances an abdomino-perineal operation is the procedure of choice.

The authors reiterate the fact that the diagnosis of all cancers of the rectum can be made by (1) digital examination (2) proctoscopic examination (3) biopsy, and that the diagnosis and localization of practically all lesions of the colon can readily be made by roentgenologists, provided they are permitted to examine the patient with a clean bowel and to introduce a radio-opaque medium per rectum.

Ambrose H. Storck, M. D.

Brucellosis (Undulant Fever): Clinical and Subclinical. By Harold J. Harris, M. D., F. A. C. P. with the assistance of Blanche L. Stevenson, R. N. Foreword by Walter M. Simpson, M. S., M. D., F. A. C. P. Second edition. Paul B. Hoeber, Inc., Medical Book Department of Harper and Brothers. 1950. Illus. Pp. 617. Price, $10.00.

The first edition of this book, including observations of 250 cases of brucellosis, was published in 1941, at a time when chronic brucellosis was not generally recognized. The author endeavored to show that the infection was rather prevalent and

that because of its protean manifestations the disease was difficult to diagnose. The second edition is more complete in its scope and the conclusions are based on 700 cases.

The disease is discussed in all of its phases and the subject is thoroughly covered. The incidence of the infection in animals is shown, thereby demonstrating that the disease is probably prevalent throughout the country.

In the chapter on pathology and in case reports throughout the book, the author shows conclusively by cultural means that the organism may invade any tissue or organ in the body thereby causing a myriad of symptoms.

The symptomatology includes the protean manifestations of the infection showing the difficulties encountered in clinical diagnosis.

Laboratory diagnosis is discussed in full and the author concludes that no single procedure except recovery of the organism is adequate for diagnosis. Diagnosis must be based on whatever laboratory findings are available plus a complete and detailed history of the illness. In view of the fact that present laboratory procedures are inadequate for diagnosis in the chronic infections, the author feels that the use of the therapeutic test is justified. One must bear this in mind while studying the case report.

In the chapter on treatment, Harris is conservative in his opinion of the value of the new antibiotics. Many investigators do not feel that these have been proven in the low grade infections.

The author has been most liberal in quoting the findings of other workers. The bibliography of 747 references almost makes the book a symposium on brucellosis. The monograph will be well received by those who are familiar with brucellosis and will be criticized by those who do not understand the infection.

Since brucellosis definitely presents a complex problem in the practice of medicine, this book is recommended to diagnosticians and general practitioners.

H. J. SCHMIDT, M. D.

Surgery of the Eyes: Injuries. Alston Callahan, B. A., M. S. (Ophth.), M. D., F. A. C. S., Springfield, Ill., Chas. C. Thomas, Publisher, Pp. 217. Illus. Price, $11.50.

The author is to be congratulated upon this timely addition to ophthalmic literature. In this volume of 240 pages with 367 excellent illustrations of which 20 are in color, both military and nonmilitary phases of the subject are presented in an orderly manner and readable style. The table of contents, index and references are ample.

The first 6 chapters are devoted to affections of the globe and the other 49 to those of the adnexa. Among the procedures described are keratoplasties, numerous methods of lens extraction, retinopexy, enucleations, and implants. Electronic and roentgenographic localization, and the removal of intraocular foreign bodies are discussed in detail, as well as the McLean corneoscleral suture.

Several chapters are devoted to skin grafts. The techniques involved in mucous membrane grafts and socket reconstruction are presented in detail, as well as the plastic materials and inert metals employed.

Among the interesting new subjects presented is ophthalmopedics; the mechanical devices employed to hasten healing and improve cosmetic results following plastic surgery. The newer preparation methods of patients, instruments and supplies are also detailed. For the ophthalmic surgeon this well written volume is a must, either as a text or reference book.

CHAS. A. BAHN, M. D.

The Esophagus and Pharynx in Action. A Study of Structure in Relation to Function, by William Lerche. Springfield, Chas. C. Thomas, Publisher 1950. Illus. 222 Pp. Price $5.50.

This small monograph describes the author's detailed study of 100 cadaver specimens of pharyngo-esophageal and esophageal segments. The primary purpose of the research was to investigate the closing mechanism of the cardia and the study was later extended to include an investigation of the relation of structure to function in the stretch of the alimentary canal from cardia to pharynx during the acts of regurgitation and deglutition. Since the segments examined showed varying conditions of regurgitation and contraction, the author was able to reconstruct the patterns of functioning of the various parts. The report has been supplemented by a review of the pertinent literature and roentgenographic and statistical information of considerable interest and value.

The author is convinced that the closing mechanism at the cardia, discovered by Helvetius more than two centuries ago, is the "constrictor cardiae." He regards the inferior esophageal sphincter as the closing mechanism between the esophagus and the G-E vestibule. Normally, it is always closed in contraction. As the constrictor cardiae ordinarily is not contracted when the stomach is empty, the inferior esophageal sphincter then constitutes the only closure between the negative pressure in the esophagus and the positive pressure in the stomach. The formation of pockets, dilatations, and diverticula are described as due to a loss of elasticity which gives rise to disturbed function, which is conducive to spasm of the constrictor cardiae as well as of the inferior esophageal sphincter with delay in the passage of contents and with an increase of pressure in the vestibule and ampulla.

The reviewer knows of no other source which describes the musculature and structures in the detail given in this monograph. From this point of view, the material should be of particular interest to the anatomist, pathologist, and surgeon. Since

the author was fortunate in having the cooperation of the Medical Illustrations Studio of the University of Illinois, the diagrams and illustrations are extremely well done. It is obvious from the brief summary given above that the physiologist, internist, and radiologist will also find much material of interest which is not readily available in other sources.

H. S. MAYERSON, Ph. D.

Asphyxia Neonatorum: Its relation to the fetal, blood, circulation and respiration and its effect upon the brain, by Wm. F. Windle, Ph. D., Sc. D. Springfield, Ill., Charles C. Thomas, Publisher. 1950. Pp. 70. Price, $2.00.

This little book discusses primarily the physiology of oxygenation of the fetus, the functions of the placenta, and the changes that occur at birth. The fetal circulation is described from the viewpoints of anatomy and of physiology. Stress is placed on the importance of allowing the blood to drain from placenta to child after birth by practicing late ligation of the cord.

The author feels that animal experimentation has abundantly proved that oxygen deprivation for varying lengths of time produces distinct and permanent changes in the mentality of the animal. He is of the poinion that such changes can be and are produced in the human fetus and that neurologic and psychologic troubles in later life may be produced by anoxia during labor and delivery. He feels that this is particularly true as regards "the injudicious use of the anesthetic agents that have a marked depressing action on the fetal respiratory center." (Page 54)

The question of treatment is not discussed. The author is interested primarily in prevention, and this book helps to explain the mechanism of the production of asphyxia neonatorum—better termed anoxia. It is well worth perusal.

E. L. KING, M. D.

Plasma Clot Suture of Peripheral Nerves and Nerve Roots: by I. M. Tarlov, M. D., Springfield, Charles C. Thomas, Publisher. 1950. Pp. 116. Illus.. Price, $5.50.

This small monograph gives a very clear exposition of the techniques involved in the use of plasma clots for peripheral nerve sutures and nerve roots of the cauda equina. This method was first worked out by Young and Medawar in England using cockerel plasma. The author claims that the strongest clots are formed from autologous blood drawn into paraffined tubes and chilled. The unmodified centrifuged plasma is withdrawn and applied to the two ends of the nerve which have been positioned on small guide wires within a latex mold. After five minutes, the plasma clot has formed and five minutes later the mold can be removed. Wherever conditions of mechanical stress may occur the author recommends the additional use of fine tantalum wire stay sutures. The plasma clot method is ticularly well adapted to the use of cable grafts. The applications of the method to other types of nerve sutures is discussed and there is some consideration made of homografts, autografts, and frozen grafts. The advantages of the clot method over simple suture methods include prevention of outgrowths of regenerating axons, absence of shearing effects of adjacent tissues, and the possibility of good orientation of the stumps. There are no case discussions and no indications of comparisons of functional regeneration. However, the methods are very clearly described and this highly recommended little monograph is very profusely and excellently illustrated.

L. M. N. BACH, Ph. D.

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